

STATE OF TENNESSEE
BIENNIAL REPORT
OF THE
DEPARTMENT OF AGRICULTURE
1911-1912

T. F. PECK, COMMISSIONER

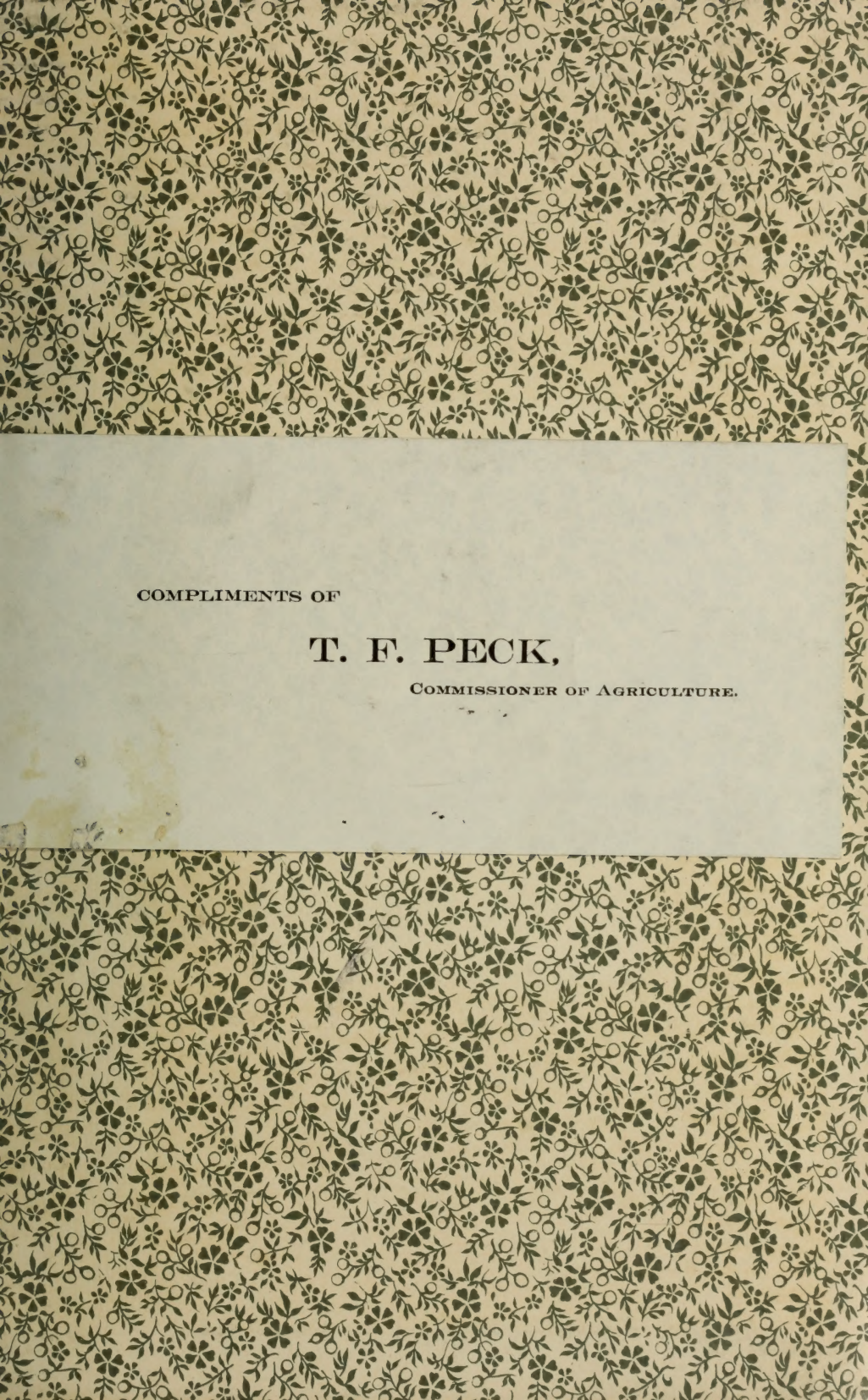


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T. F. PECK,
Commissioner of Agriculture.

STATE OF TENNESSEE

BIENNIAL REPORT

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DEPARTMENT OF
AGRICULTURE

1911 -- 1912

T. F. PECK, Commissioner

NASHVILLE, TENN.
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1911/12

DEPARTMENT OF AGRICULTURE.

T. F. PECK, Commissioner of Agriculture	Etowah
T. G. SETTLE, Chief Clerk.....	Nashville
DR. GEORGE R. WHITE, Live Stock Commissioner.....	Nashville
JESSE TOMLINSON, Fertilizer Inspector, Middle Tenn.....	Columbia
R. T. DEBERRY, Fertilizer Inspector, West Tennessee.....	Humboldt
S. E. REYNOLDS, Fertilizer Inspector, East Tennessee....	Elizabethton
A. L. GARRISON, Chief Feed and Seed Inspector.....	Crossville
J. W. WYNN, Feed and Seed Inspector, East Tennessee..	Sevierville
N. C. WHITE, Feed and Seed Inspector, Middle Tennessee...	Pulaski
A. M. STOUT, Feed and Seed Inspector, West Tennessee....	Greenfield
DR. J. S. WARD, Apiary Inspector	Nashville
H. N. HARDEMAN, Stenographer	Nashville

BUREAU OF IMMIGRATION.

T. F. PECK, Commissioner of Agriculture, Chairman.....	Nashville
HERVEY WHITFIELD	Clarksville
B. A. BARRY	Greenfield
J. J. B. JOHNSONIUS	Paris
JOHN T. WILDER	Monterey
A. C. FLOYD	Memphis
F. M. RUNNELS	Knoxville
JESSE S. COTTRELL	Chattanooga
RUTLEDGE SMITH	Cookeville
JOHNSON BRANSFORD	Nashville
JOHN R. WILLIAMS	Knoxville

STATE BOARD OF ENTOMOLOGY.

GOV. BEN W. HOOPER	Nashville
T. F. PECK	Nashville
BROWN AYRES, University of Tennessee.....	Knoxville
G. M. BENTLEY, State Entomologist	Knoxville

DEPARTMENT OF AGRICULTURE.

NASHVILLE, Tennessee, December 20, 1912.

His Excellency, B. W. Hooper, Governor:

SIR—In compliance with the law, I herewith submit my Biennial Report for the Department of Agriculture, covering my administration of the Department from June 1, 1911, to December 19, 1912, a period of a little more than eighteen months.

Your attention is called to the financial statement on page 20, to which I refer you with some pride, because it *makes good* your promise of a business administration of this Department. While the duties of this Department primarily are the enforcement of the agricultural laws, we have found that that could best be done by applying strict and thorough business methods in the routine work of inspection, and supplementing that by a campaign of education with all classes affected by the laws, and getting them to understand the real purpose, thus securing their active cooperation. This cooperation is growing stronger all the time, and reports from the Live Stock Department, and from the Feed and Seed Departments, as well as from the Entomologist and Apiary Inspector so show.

We wish to commend the College of Agriculture for the splendid work it has accomplished, and the excellent course it offers in advanced work in agricultural training, and the increased attention given to practical farm demonstration work and their Short Course work in agriculture, making available for the farmer who has been deprived of scientific training the results of the State Experiment Station in solving problems encountered by the farmer, and of a character too complicated and too expensive for him to solve alone.

COLLEGE OF AGRICULTURE.

Tennessee needs more men trained for advanced work in agriculture to work in Tennessee. We have a College of Agriculture thoroughly equipped to provide the training; Tennessee has the young men with the natural ability to receive that training, but unfortunately our State has not made the effort to stimulate among our boys an interest in the possibilities of Tennessee along agricultural lines. Instead of this our elementary schools and high schools have offered training and influence leading to other professions rather than farming, with the result that other vocations and professions are crowded, with small compensation and little chance for advancement, while the agricultural interests have suffered from the loss of interest in and tide away from the farm.

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Private Office of Commissioner T. F. Peck.

The College of Agriculture must have students if it turns out trained men for advanced work in agriculture. Tennessee should furnish the students. If the State furnishes the students interest must be aroused among our young men in agriculture; we must convince them of the great possibilities for agriculture in Tennessee when conducted along practical and scientific lines. The young man who has grown up on the farm where antiquated methods were used, where the soil was allowed to grow poorer, where he had no advantages for an education or for society, where roads were bad and markets poor, where he could see only the worst side of life on the farm, naturally wanted to get away from a vocation that offered so little to him.

The Department of Agriculture has been striving to stimulate interest in better methods in farming, to encourage education along agricultural lines, to show the farmer boy what we can make out of the vocation of farming when we improve our land, our roads and our schools, and when we get in position to avail ourselves of the vast amount of information that has been worked out for the benefit of the farmer.

COOPERATION OF RAILROADS AND NEWSPAPERS.

We have secured the liberal cooperation of the newspapers of the State, and through their pages have sent out over one hundred and fifty columns of "Plain Talks to Farmers," covering the subjects of most interest to them, and in language they could understand, and thus be able to apply the suggestions in their farm work. That these plain talks have been appreciated is evidenced by the large number of letters from interested farmers wanting further information on subjects discussed. The Department is getting in direct touch with farmers all over the State who are improving their methods in farming.

The railroads of Tennessee have given the Department great assistance; they have been at great expense in helping to disseminate information useful to the farmer. During October and November, 1911, the Southern Railway operated an Agricultural Special, consisting of eight cars, for this Department over their lines in East Tennessee. This special was equipped by this Department with an educational exhibit of the farm products, typical breeds of live stock, and health and sanitary exhibit. It also carried a full corps of lecturers, covering every subject of interest to the farmer and live stock breeder.

THE AGRICULTURAL SPECIAL.

The special was met by large crowds at every stop, and fully 100,000 people visited the special during the trip. The beneficial effects were so apparent that seven of the most important railroads of the State joined in the movement for a tour of the State during the summer of 1912, and on this tour a domestic science car, with exhibits, was added, with competent lecturers on this important subject.

The special left Nashville on July 1, 1912, traveled 6,300 miles, made 212 stops, and was inspected by nearly 250,000 people. It carried twenty-five lecturers, covering the subjects of interest to the farmers and their wives, sons and daughters as well, and left in its wake people enthused with a determination to improve not only their land, live stock and crops, but rural life conditions in general.

The Agricultural Special accomplished a great work in stimulating the farmer to better methods, and the railroads of the State merit the heartiest commendation for their substantial cooperation—not alone for the special, but for their liberality in furnishing transportation to delegates to farmers' institutes, breeders' meetings, etc.

DIVISION INSTITUTES.

The three division farmers' institutes, held for East Tennessee at

Knoxville, for Middle Tennessee at Nashville, and for West Tennessee at Jackson, have recorded the largest attendance this year in their history, and the county farmers' institutes have shown increased interest and attendance.

COUNTY DEMONSTRATION FARMS.

The Department of Agriculture fully appreciates the work of the Experiment Stations in solving the problems confronting the farmer in his work, and we have been trying to make that work available for the farmer. The most practical way to do this is through the County Demonstration Farm.

Since I have been connected with the Department of Agriculture I have been urging the importance and value of a county demonstration farm in every county, to demonstrate the results of work of original investigation done by the experiment stations. Experimental work is too expensive to be carried on by the individual farmer, and he is not equipped in the majority of cases with the necessary education for the work. Then there is no necessity of experimenting by farmers on facts proven by the experiment stations.

The important thing to do is to present the facts to the farmers on the demonstration farms in a way that will be applicable to them on their farms. I have insisted that the demonstration farm should be typical of the average farm, and the equipment for the farm should be within reach of the average farmer, and no farm operation should be undertaken beyond the ability of the average farmer to follow on his farm.

Two results should always be attained—increased production per acre and increased fertility. To interest the farmer he must see how he can increase his production and increase the fertility of his farm without making expenditures out of his reach. When that is shown him and he has successfully taken the first step he will more willingly make the second and third; each step in his progress will make the next one easier.

Now, when I started this agitation I knew the Department of Agriculture did not have any available funds for getting the work under way, but I knew it would take time to get the farmers to understand and appreciate the importance of the demonstration farm, and that it did not interfere with any other work along agricultural lines, but was intended to strengthen and make more effective the other work under way. I have been trying to get the farmer to understand the difference between the work of the experiment station and that of the demonstration farm. The first solves the problem confronting the farmer; the latter demonstrates to the farmer how he can apply the

solution on his farm to improve his farm and increase his revenues. We all know that for every progressive farmer who is keeping abreast of the progress in agricultural pursuits we have at least ninety who are not making progress; whose methods are antiquated; who are allowing their land to grow poorer.

If we can reach, interest and help this class of farmers the beneficial effects will be felt by all professions and industries. The experiment stations are doing their work well. Our college of agriculture offers educational advantages along agricultural lines. Much is being accomplished by the agricultural short courses and farmers' institutes.

The United States farm demonstration agents are doing a valuable work with individual farmers in special crop production, but the field for the county demonstration farm is not covered. It will afford opportunity for continuity of effort in soil building; it will serve as an object lesson—a practical working demonstration, not only with a few acres for a special crop, but covering every feature of farm work. It will form a center for community interest: it will bring the farmers together; will develop cooperation; will make possible and practical community specialization in crop production, guaranteeing best prices to farmers for their products.

We have abundant evidence that the farmer's interest in the demonstration farm is aroused; we have inquiries from every county in the State asking how the demonstration farm can be secured.

COOPERATION OF COUNTIES.

The Department of Agriculture suggests that the County Court of each county wanting the demonstration farm buy a tract of land typical of the farms of the county; that the equipment and labor be provided by the county, and the county receive all the revenues from the farm. A farm conducted in this manner should be a paying investment for the county, because the farm, to serve its purpose, must produce a profit and increase in fertility each year.

To pay for the expert direction of the farms a bill should be passed by the next Legislature allowing the Department of Agriculture to use the money derived from the sale of fertilizer, feed and seed inspection stamps, in excess of the amount necessary to pay for the fertilizer, feed and seed inspection and incidental expenses. This fund would pay for expert direction of the farms and the college of agriculture could provide the agricultural experts from its graduates, thus opening a field for young men that would attract the brightest to agriculture.

The demonstration farm should be in connection with the high



Interior View Department of Agriculture, Showing Desk of Dr. G. R. White, State Live Stock Inspector.

school of the county, and the agriculturist could teach agriculture in the high school. The farmers pay the tax from which this fund is derived, and it should be expended directly for their benefit. The county demonstration farm will be a power in the development of the agriculture of our State.

FEED AND SEED LAWS.

In the enforcement of the feed and seed laws we have made substantial headway. This has been accomplished by a rigid inspection and careful analysis, and also by a campaign of education for the produce dealer and consumer getting the honest manufacturer and dealer to understand that they were protected against the unscrupulous manufacturer and dealer in requiring the law to be complied with, and the consumers to understand that with the enforcement of the law they would get what they bought without adulteration, thus getting the value claimed for the article. The manufacturer, dealer and consumer appreciate the value and importance of the law, and are lending their hearty cooperation to its enforcement.

Mr. A. L. Garrison, Chief Feed and Seed Inspector, and his three assistants, J. W. Wynn for East Tennessee, Noble C. White for Middle

Tennessee, and A. M. Stout for West Tennessee, are to be commended for their thorough and conscientious work. They have materially increased the revenues and improved the service, and this with a force of four men, as against ten men formerly employed for the same service.

LIVE STOCK INDUSTRY.

The condition of the live stock industry in Tennessee has been materially improved during the past eighteen months under the direction of Dr. George R. White, State Live Stock Inspector. More than 3,000 square miles of territory has been released in that time from the Texas fever quarantine, and the work of tick eradication is progressing so well that by the end of the year 1913 the quarantine will be removed from the entire State. Sheep scabies, covering a large territory, has been eradicated; much work has been done toward the eradication of bovine tuberculosis, and a campaign of education has been conducted by the State Live Stock Inspector on the importance of live stock sanitary control work in the State that is receiving the hearty cooperation of live stock raisers and veterinary practitioners throughout the State. Dr. White stands at the head of veterinary practitioners in the United States, and is a recognized authority in veterinary practice. The effect of his work will be shown in the increased growth of the live stock industry in the State.

COMMERCIAL FERTILIZERS.

Much time has been devoted to getting the users of commercial fertilizers to understand how to use them intelligently, and careful attention has been given to the inspection and analysis of the fertilizers offered for sale, in order to ascertain that they contain the plant food claimed for them, and we have found that the fertilizers, with a few exceptions, come up to their guarantees. The detail of the enforcement of the fertilizer law has been in the hands of Hon. Jesse Tomlinson, Assistant Commissioner for Middle Tennessee; R. T. DeBerry, Assistant Commissioner for West Tennessee, and Hon. A. H. Tipton, Assistant Commissioner for East Tennessee for 1911 and until September, 1912, and since his death S. E. Reynolds has been appointed Assistant Commissioner for East Tennessee, and has discharged that duty since his appointment. The gentlemen named are to be commended for the thoroughness of their work, not alone for their inspection work, but their able cooperation in Institute work as well.

CHIEF CLERK.

E. O. Luther served as Chief Clerk for the Department from June

1, 1911, to July 1, 1912, when he resigned and was succeeded by T. G. Settle, who had served most acceptably as State's Statistician for the Department up to that time. In the few months he has served in the capacity of Chief Clerk for the Department he has proven his superior capacity for detail and thoroughness that is very gratifying.

STATE FAIR.

The Tennessee State Fair for 1911 and 1912 was a success in the number of high character of exhibits, and proved a great stimulus to the farmers and live stock breeders for better crops and better live stock, and the educational value of the fair cannot be questioned.

The financial returns from the 1912 fair were not what they should have been, because of rain for three days. With fair weather the fair would have been more remunerative.

In taking over the property of the fair it was necessary to do a large amount of repair work to put the buildings in condition for the fair. The Legislature appropriated \$10,000 per year for two years for permanent improvements and no other purpose, so all the up-keep, insurance, salaries, premium list, advertising and other expenses incident to the holding of a great fair had to be met by the revenues of the fair, and so far they have not been sufficient, and it cannot be expected that they will be every year. However, the State of Tennessee can afford to care for the deficit when we consider that our Tennessee State Fair compares favorably with the very best held in the nation, and we must remember that other states provide most liberally for their state fairs.

The work of the Trustees of the Tennessee State Fair is practically without compensation, and they should be given support sufficient to enable them to hold a fair that will do justice to the great agricultural and live stock industries of the State.

OFFICE FORCE AND EQUIPMENT.

The office force in the Department merit commendation for their efficient work and their willingness to devote extra time when the work demanded. Mrs. Sarah Alexander served the Department for several months very acceptably. She was succeeded by Hoyt N. Hardeman, whose work has been satisfactory at all times. Miss Ada Palmer and Miss Kate E. Godfrey have done special stenographic work for the Department in a very satisfactory manner.

The office of the Department has been refurnished during the past eighteen months in a manner to give more room, protect the books



Interior View, Department of Agriculture. Exhibit of Corn, Grasses and Seeds.

and records from dust, make a better display of the exhibits, and to facilitate the work of the office force. New desks, office chairs, filing cases, book cases, a mailing machine, a fireproof case for feed and seed stamps, and two new typewriters have been installed, and all this has been done out of the regular appropriation for office expense.

PRINTING AND DISTRIBUTION OF LITERATURE.

When I assumed charge of the Department of Agriculture I found each mail bringing inquiries concerning opportunities offered the home-seeker in Tennessee, and I failed to find any kind of literature available that would answer such inquiries. Neither did I find any data collected covering this subject. So we at once began the collection and compilation of data. We first published "Facts About Tennessee," a forty-eight page booklet giving in a condensed form, generously illustrated, the facts about our agricultural, timber and mineral resources, facts about our climate and rainfall, facts about our educational system. Fifteen thousand copies, comprising the first edition, were eagerly sought, and a second edition of fifteen thousand copies is nearly exhausted, and the demands for the booklet still come in.

On the first of January, 1912, we had printed a map of Tennessee, corrected to date, showing counties, railroads, postoffices and streams, together with ten graphics giving information relative to population, forestry, minerals, fruits and vegetables, education, phosphate, corn, wheat, cotton, tobacco and peanuts; also a list of State officials and officials of the Departments of Agriculture and Immigration. On the reverse side of the map was printed a general description of the State and a detailed description of the State by counties. This map has been eagerly sought by homeseekers from the Eastern, Northern and Northwestern States; they have been mailed upon request to people in every State in the Union, and sent upon request to people in foreign countries. There has been a great demand also from schools for the map. The issue is about exhausted, and we have an entirely new map, with the highways added, showing the counties in colors, and the location of the various mineral deposits, clay, phosphate, etc. Also, on the same sheet, is found a soil map, showing the character of soils in different portions of the State, with elevation, etc., with the crop graphics corrected to date, and with the same matter on the reverse side as on the reverse side of the first map published, corrected to date.

With the maps and "Facts About Tennessee," we have been able to furnish the information sought, and for more detailed information we have induced many of the counties and many of the cities and towns to publish and furnish this Department attractive booklets and pamphlets, descriptive of their immediate county and community.

We have issued a bulletin on Commercial Fertilizers, giving the analysis of every brand of fertilizer sold in the State, from samples taken according to law by Fertilizer Inspectors from this Department. The bulletin also contained other information valuable to the user of commercial fertilizer.

We have also issued a bulletin containing the analysis of every brand of commercial feeding stuff offered for sale in Tennessee. This bulletin also contained much information valuable to the user of commercial feeding stuff, and we have another bulletin now in press on this important subject.

We have issued a bulletin on Field Seeds. This bulletin gives the analysis of the seeds offered for sale in Tennessee, showing their purity and percentage of germination, also name of dealer.

We have published the laws, rules and regulations governing the sale of fertilizers, feed and seed, and no one need claim ignorance of the law, for the information has been widely circulated.

In order that the farmers might have an opportunity to know what the agricultural laws of the State are, we have compiled the agricul-

tural laws of Tennessee with the legal weights and measures, and published same in a neat booklet, and use every opportunity to place a copy in the hands of every farmer interested.

Especial attention is called to the publication of Tennessee Agriculture, a monthly bulletin issued by the Department of Agriculture, and mailed direct to the farmers who ask for it. A copy is also mailed to all of our crop correspondents and all the newspapers. The latter reproduce much of the subject matter, thus giving it a wide circulation.

The issuance of this bulletin became a necessity because of vast amount of matter accumulated of special value to the farmer, and possible to give him in this way. The bulletin has been admitted as second-class mail matter, thus saving almost one-half in the expense of getting the information to the farmer.

The various publications issued by the Department have been couched in language that is intelligent to the farmer, and that he appreciates their value to him is abundantly proven by the great demand for the publications by the farmers from every county in the State.

This feature of this work by the Department should and will be enlarged if an appropriation for it be made by the Legislature.

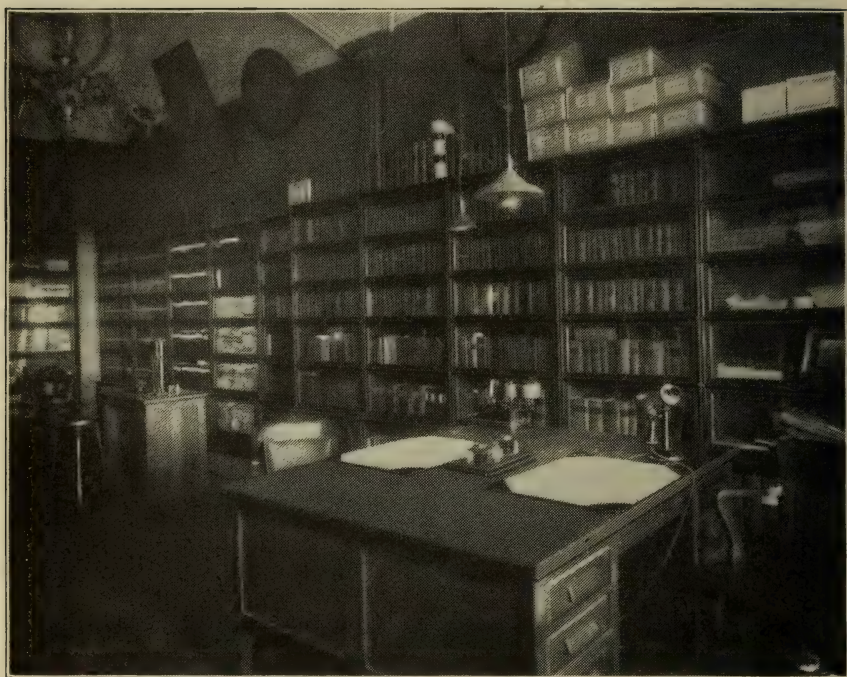
STATE ENTOMOLOGIST.

The work of the State Entomologist deserves commendation. The last Legislature increased the appropriation for this work, and beneficial results have already been shown. Attention is directed to the Seventh and Eighth Annual Reports, included in the Appendix to this report.

In addition to the inspection work, laboratory work and class work, Prof. Bentley has made a complete tour of the State with a comprehensive exhibit of the economic insects, and the equipment necessary to combat the injurious ones, and has conducted practical demonstrations in spraying, pruning, grafting, etc., and has also done much valuable lecture work in Farmers' Institutes. The growth of the nursery orchard and small fruit industries in the State is satisfactorily large, and will prove a source of large profit with the protection and direction of the State Entomologist and his very efficient assistants.

WORK OF STATE BOARD OF ENTOMOLOGY.

Special commendation should be given to the State Board of Entomology for the advancement and new lines of work which it has taken up during the past two years. The efforts of the board have been influential in advancing the vegetable, nursery, fruit and bee-keeping in-



Interior View, Department of Agriculture, Showing Library and Desk of Chief Clerk.

terests of the State. Today thousands of farmers are deriving good from the board where hundreds were a few years ago. The correspondence of the board has increased to the extent of requiring fully two-thirds of the time of the Entomologist in giving information desired. The nurseries and orchards of the State have increased so that the time of the Assistant Nursery Inspector is devoted wholly to this work. The nurseries since 1905 have increased from 194 to 346 in 1912. The orchard interests of the State are rapidly reviving, the old abandoned orchard is being cut down or being severely pruned and sprayed. Many of the undesirable types of fruit have been top grafted. The new orchards in the State are of considerable size and located in many different counties, especially those in Middle and East Tennessee. The board has been instrumental in offering timely and important advice by way of determining the location of orchards; the proper selection of varieties adapted to the respective sections; the age of the trees and the correct method of planting, cultivating, pruning and spraying the same. There is now an urgent demand for in-ping fruit. Attention will be given this important line during the coming year.

During the months of July and August, 1912, continuous time of the entomologist was taken in giving talks and making demonstrations on the Agricultural Special Train concerning economic insects and plant diseases and the best methods of controlling the same. Different forms of spray machines from the simple to the higher types were explained in connection with this train which was run over the entire State.

APIARY INSPECTION.

The apiary inspection work has proved of great benefit to the struction in regard to the best methods of sorting, packing and ship-beekeepers of the State. From the inspections made several cases of foul brood, a dangerous bacterial disease of bees, have been located and eradicated. Without the bee inspection work the beekeeping interests in Tennessee would be entirely obliterated. Under the inspection requirements the honey production and queen rearing output will be greatly fostered and Tennessee instead of ranking third in honey production will become a close competitor with Texas and California.

REPORT OF STATE BOARD OF ENTOMOLOGY.

The following report and bulletin of the State Board of Entomology gives the important lines receiving greatest attention during the year. The report, however, represents only one of the four publications issued annually by the board. For those not acquainted with the various duties of the Board of Entomology the following lines of its workings may be suggestive, viz.:

1. To prevent the introduction into the State of dangerous pests and plant diseases all foreign nursery stock coming into the State is inspected.
2. To check the spread of injurious forms from place to place within the State.
3. To investigate the habits and nature of injurious insects and plant diseases and prescribe remedies for their prevention or control.
4. To publish and distribute literature giving instruction on methods of combating and preventing insect enemies and plant diseases.
5. To answer letters of inquiry about farm, garden and orchard pests free of charge and send bulletins treating the same.
6. To demonstrate the making and applying of spray solutions and give information on spray machinery.
7. To inspect annually all the nurseries, greenhouses and apiaries and issue certificates of inspection.

All may apply for assistance. Fruit growers, farmers, vegetable, cotton and tobacco growers, beekeepers, florists and nurserymen may

get assistance and the bulletins and reports free by addressing the State Entomologist and Plant Pathologist, Knoxville, Tennessee.

RAVAGES OF PESTS.

None of the changes modern civilization has made upon the earth are more evident to the American farmer than that of the increased difficulty in saving his crops from the ravages of noxious insects and parasitic diseases. These enemies come to us from the North, from the South, the East and the West; from Europe and the islands of the sea and in our midst they have flocked from the forest to the field, deserting the wild plant for its cultivated relative, or changing their habits to fit the new environment.

Very careful estimates for Tennessee, based on crop reports and actual insect damage over a series of years, show that the loss due to insect pests of farm crops, including fruits, forest and live stock, now reaches the almost inconceivable total of \$11,564,983 annually. A brief resume of the records of damages done by insect pests and of the estimates which form the basis of the above statement may make this alarming fact more convincing. From the Agricultural Census giving the value of crops in Tennessee in 1909 the annual loss of insect devastation is based.

ANNUAL LOSSES FROM PESTS.

The annual loss in Tennessee from insects destroying crops is as follows:

Corn	\$ 4,581,900
Cotton	1,796,700
Hay and forage crops.....	1,261,800
Wheat	691,300
Tobacco	566,200
Oats	237,800
Potatoes	1,043,100
Nursery stock, flowers and plants.....	104,200
Strawberries	83,579
Orchards	345,900
Grapes	1,404
Forest and timber products.....	851,100
Total	<u>\$11,564,983</u>

Insect pests form a host of tax gatherers taking possession of the farmer's crops and forcing their demands without process of law unless preventable measures are vigorously prosecuted. By becoming acquainted with the habits of insects the farmer will be able to save the greater part of this unnecessary loss and by wise legislation to make



Interior View, Department of Agriculture. Exhibit of Fruits.

such laws in regard to their destruction or preservation as will be to the best interests of not only the present but the future generation.

Rational methods of general farm practice with the proper use of sprayer and insecticides by the Tennessee farmers would save them a larger part of this enormous loss.

With a large class of farmers and fruit growers spraying has become a recognized part of the season's operation. When the belief becomes general that it is as important to save a crop from destruction by pests as it is to produce it, that fighting noxious insects will take its place as a farm process alongside that of fighting weeds, then the vast annual loss now suffered because of insect pests and plant diseases will be greatly lessened.

The close study of soil, fertilizers, weeds, live stock, insect pests and plant diseases of the farm, garden and orchard crops is rapidly raising the science of agriculture and horticulture to a plane where it is no longer regarded as irksome drudgery, but is one of the highest callings of a free and intellectual people.

FINANCIAL STATEMENT.

Following is a statement of receipts and disbursements of the Department of Agriculture from June 1, 1911, to December 19, 1912, in-

RECEIPTS.

From sale of fertilizer tags from June 1, 1911, to December 19, 1912, inclusive.....	\$51,723 53
From sale of seed stamps from June 1, 1911, to December 19, 1912, inclusive.....	5,136 39
From sale of feed stamps from June 1, 1911, to December 19, 1912, inclusive.....	31,396 79
Total	\$88,256 71

DISBURSEMENTS.

By amount paid State Treasurer from sale of fertilizer tags from June 1, 1911, to December 19, 1912, inclusive.....	\$51,723 53
By amount paid State Treasurer from sale of seed stamps from June 1, 1911, to December 19, 1912, inclusive.....	5,136 39
By amount paid State Treasurer from sale of feed stamps from June 1, 1911, to December 19, 1912, inclusive.....	10,669 03
Balance on hand from sale of feed stamps.....	20,727 76
Total	\$88,256 71

The financial statements of the Chief Feed and Seed Inspector, Mr. A. L. Garrison; the State Live Stock Inspector, Dr. George R. White; the Apiary Inspector, Dr. J. S. Ward, and the Commissioner of Immigration, are found on other pages of this report.

Below are statements of the funds appropriated from the Treasury and expended under the direction of this Department:

INSTITUTE.

Biennial appropriation	\$10,000 00
Stenographer's salary, 18 months.....	\$1,350 00
Expended in institute work.....	7,361 74—
Balance in Treasury December 19, 1912....	\$ 1,288 26

The salary of the stenographer and the traveling expenses of the Commisisoner of Agriculture are provided for in the appropriation for institute work.

OFFICE EXPENSE.

Biennial appropriation	\$6,000 00
Expended	4,261 73

Balance in Treasury December 19, 1912..\$ 1,738 27

FERTILIZER INSPECTION.

Biennial appropriation.....	\$ 5,000 00
Expended	4,261 73

Balance in Treasury December 19, 1912..\$ 738 27

BUREAU OF ENTOMOLOGY.

Biennial appropriation.....	\$12,000 00
Expended	7,086 51

Balance in Treasury December 19, 1912...\$ 4,913 49

APIARY INSPECTION.

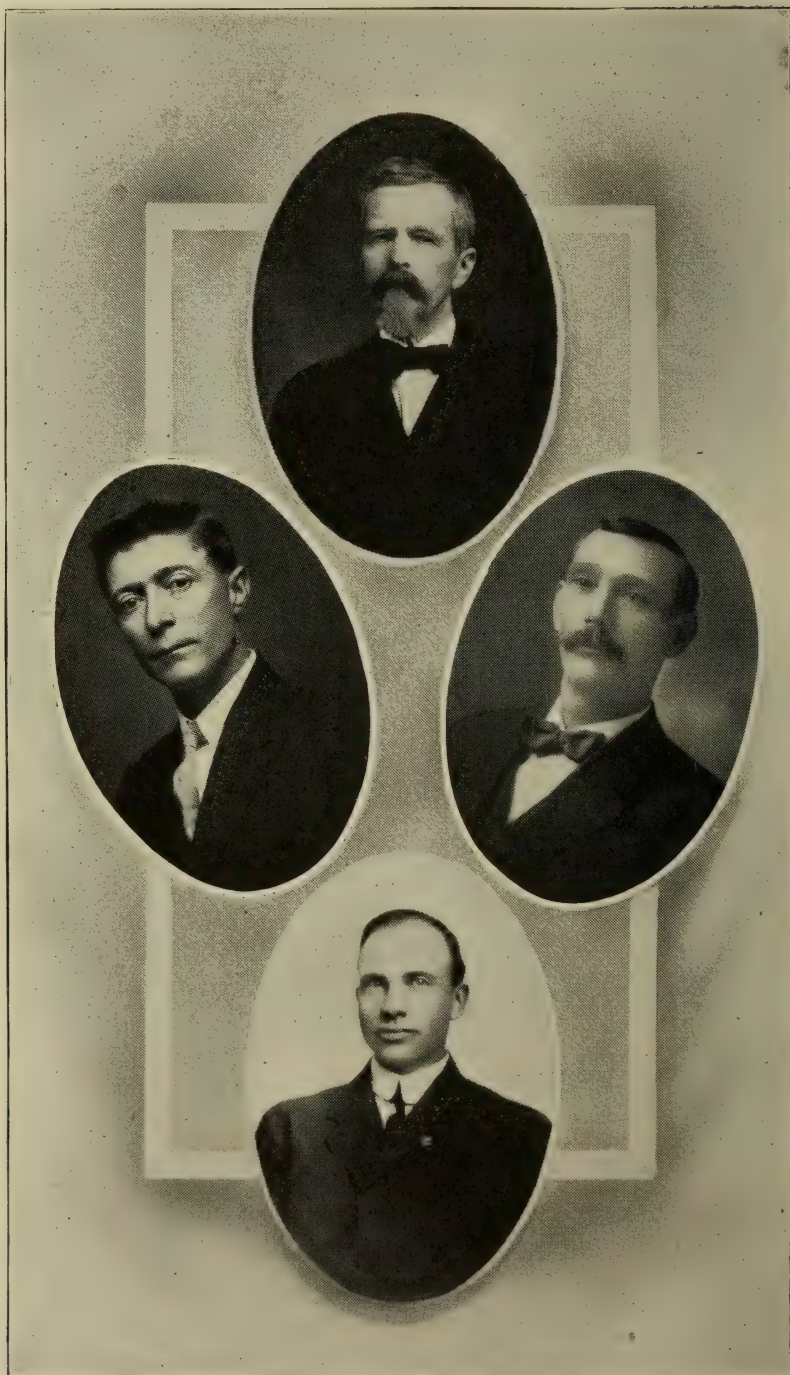
Biennial appropriation.....	\$ 2,000 00
Expended	1,259 78

Balance in Treasury December 19, 1912..\$ 740 22

RECOMMENDATIONS.

To make more effective the work of the Department of Agriculture, we recommend that the present Legislature enact laws providing for the establishment of a chemical laboratory to serve the Department of Agriculture in the analysis of fertilizer, feed, soils, etc., and the same laboratory could also do the necessary work for the State Geological Survey. The Department of Agriculture is now paying out almost as much as it would cost to maintain a chemical laboratory, and it would be greatly to the advantage of the Department to have analyses made promptly, and the laboratory located where it would be in constant touch with the Department. There is paid out now close to \$3,000 per year for chemical analyses, and much work is left undone that could be done if we had a laboratory in connection with the Department. A bacteriological laboratory in connection with the State Board of Health could take care of all the bacteriological work of this Department, and it would be impracticable to combine the chemical and bacteriological laboratories because of the character of work to be done.

The Chairman of the State Fair Trustees should be empowered to commission officers with the same powers exercised by deputy sheriffs



JESSE TOMLINSON, Assistant Commissioner of Agriculture for Middle Tennessee.
R. T. DEBERRY, Assistant Commissioner of Agriculture for West Tennessee. S. E. REYNOLDS, Assistant Commissioner of Agriculture for East Tennessee.
PROF. G. M. BENTLEY, State Entomologist and Plant Pathologist.

for enforcing the law on the State Fair grounds, thus saving several hundred dollars in preserving order and enforcing the law.

The results from the work of the Bureau of Immigration have proven the possible value of this Bureau when supplied with an adequate appropriation. The appropriation for the past two years was only sufficient to prove possibilities.

During the fall of 1913 a National Conservation Exposition will be held at Knoxville, Tennessee, bringing thousands of people to this State. An exhibit of Tennessee agricultural resources at that exposition would attract the attention and interest of thousands of people from other States. Following that will be the Panama Exposition at San Francisco, California, and provision should be made for Tennessee to have an exhibit at that exposition.

The Institute work, including demonstration trains and other efforts by the Department to interest the backward farmer, has created a demand for such work in excess of the present appropriation of \$5,000 per annum. This should be increased to meet the demands for that work. An agricultural building would be justified when we consider the magnitude and importance of the industry it represents, an industry that should quadruple present production. The building should provide offices for the executive work of the Department, offices for the Chief Live Stock Inspector, the Feed and Seed Inspectors, Entomological laboratory, and display hall, where a permanent exhibit from each county could be maintained.

The necessary publications by the Department have grown beyond the small appropriation for office expense to care for. The present appropriation for office expense is \$3,000 per annum. An additional appropriation of \$3,000 should be made for publications of the Department.

The live stock industry of Tennessee amounts to more than \$106,000,000, neglected as it has been in the past. The progress made during the last two years by Dr. Geo. R. White, State Live Stock Inspector, in eradication and control of live stock diseases, if continued, will double the live stock industry in a few years. This work has been done by Dr. White for the same compensation paid his predecessors, who made no claim to a knowledge of veterinary science, while the present live stock inspector stands at the head of the list of veterinary practitioners, and he should receive compensation commensurate with the work he has accomplished. His salary should be increased to \$3,000 per annum.

Burying or burning carcasses of dead animals compulsory. In order to prevent the spread of many animal diseases, and to abate



Corn Club Boys' at Middle Tennessee Farmers' Institute, Nashville, December 5-6-7, 1911.

numberless public nuisances, it is suggested that a law making it compulsory, on the part of the owners, to either burn or deeply bury the carcasses of all dead animals, be passed by the incoming General Assembly.

Bovine Tuberculosis. Since Bovine Tuberculosis is universally recognized as a deadly and dangerous disease, not only to cattle and hogs, but to the meat and milk consuming public, and the available statistics plainly indicate that this disease is on the increase in Tennessee, it behooves the lawmaking bodies of this State to seriously consider the advisability and feasibility of passing the necessary laws and making an adequate appropriation to the Department of Agriculture for the control, suppression and eradication of this disease.

Texas Fever Tick eradication. Satisfactory progress has been made in the eradication of the cattle fever tick, and it is urgently recommended that the same appropriation (\$8,000) be made for the completion of this laudable undertaking. From present indications we are warranted in presuming that ticks will be entirely eradicated, and the whole State of Tennessee be placed above the Federal quarantine line before the convening of another General Assembly, which means an annual saving to the live stock industry of the State of over \$500,000.

In order to further protect our swine raising industry, a law should be passed providing that all hogs brought into Tennessee for purposes other than immediate slaughter be accompanied by health certificates showing that they have been immunized against hog cholera by the Dorsett-Niles Anti-Hog Cholera Serum. Nearly \$3,000,000 was lost during the last year through this channel.

Tennessee is largely an agricultural State, with almost unlimited possibilities. The work of developing these possibilities is naturally divided into many branches. All branches of that work should have one center or executive head, and as with the Department of Agriculture of the nation being the executive head of every undertaking of national scope along agricultural lines, so should the State Department of Agriculture be the recognized executive head of work in agricultural undertakings by the State of Tennessee.

The Tennessee State Fair as an exponent of the agricultural and live stock industry compares favorably with the fairs of any State in the Union, except in buildings. An adequate appropriation for buildings and for premiums on strictly Tennessee products would be a wise and economic provision and it is earnestly recommended. Also provision for paying the deficit now outstanding, caused by repair work and bad weather during the 1912 fair.

To pay for the expert direction of the demonstration farms to be

established in each county in Tennessee, a bill should be passed by the next Legislature allowing the Department of Agriculture to use the money derived from the sale of fertilizer, feed and seed inspection stamps and tags in excess of the amount necessary to pay for the inspection and incidental expenses. This fund would pay for expert direction of the farms.

I submit the above recommendations as necessary, in my opinion, to the proper and profitable conduct of the Department during the next two years, and in conclusion I wish to thank you for the interest you have at all times manifested in the affairs of this branch of the State government.

Respectfully submitted,

T. F. PECK,
Commissioner of Agriculture.



DR. GEORGE R. WHITE,
State Live Stock Inspector.

BIENNIAL REPORT STATE LIVE STOCK INSPECTOR.

Hon. Thos. F. Peck, Commissioner of Agriculture of Tennessee.

SIR—As State Live Stock Inspector, I have the honor to submit this, my first Biennial Report:

The live stock industry of Tennessee represents an investment of over one hundred and six million dollars, distributed as follows:

	Number.	Value.
Cattle	994,941	\$20,654,743
Horses and colts.....	349,145	39,257,892
Mules and mule colts.....	275,000	35,060,075
Asses and burros.....	7,983	1,074,816
Swine	1,386,050	7,320,377
Sheep and lambs.....	793,963	3,005,538
Goats and kids.....	43,493	82,553

Stock raising in all its branches is generally followed, but the industry is far short of its possibilities. Some advantages the stock raiser enjoys in this State are an agreeable climate, an abundance of excellent food easily produced, a long outdoor grazing season, and a market in which the demand is always in excess of the supply. As a stock raising country Tennessee has no superior and but few equals among the States of the Union. Tennessee mules, Jersey cattle and Berkshire hogs are noted the world over for their good qualities, and the entire world is the State's market for these useful animals. In the rich blue grass sections of the State have been bred some of the fastest running and harness horses the world has produced. Sheep and hogs are produced at a minimum cost, and this industry is increasing in importance.

ANNUAL LOSSES FROM DISEASES.

The annual losses from diseases of all classes approximate \$10,000,000. The annual losses from all forms of contagious and infectious diseases amount to approximately \$7,000,000. The annual losses from *preventable* contagious diseases amount to approximately \$5,000,000.

It is this \$5,000,000 worth of animals that die each and every year in Tennessee from preventable contagious and infectious diseases which the Department of Agriculture, through its "Diseases of Animals Department" is striving so earnestly to save. In no other industry do losses of this character occur.

CONDITION OF LIVE STOCK INDUSTRY.

The condition of the live stock industry of an agricultural State like Tennessee affects the pocketbook of every citizen of the State. In addition to this, many diseases of animals are communicable to man, and some of them are exceedingly fatal in their effect; it may suffice to mention three well-known diseases—glanders, rabies and tuberculosis, to say nothing of the long list of parasitic diseases like mange or itch and trichinosis, etc., which owe their origin to animals as intermediary hosts of certain stages in the cycle of development of the parasites.

The importance to man of the welfare and health of animals was recognized by ancient governments long before the beginning of the Christian era, and resulted in the enactment of laws for the control of contagious diseases. In most instances these laws were crude, founded upon superstition and expressed little beyond the fact that danger was recognized and a need was felt for protection.

During the last century, in Europe, the losses from animal plagues such as rinderpest, anthrax, black leg, scabies, hydrophobia and the infectious swine diseases ran into thousands of millions, and the governments of that continent spent vast sums of money, in addition, for the discovery of means to protect their herds against these decimating plagues.

The United States was the last of the prominent civilized countries to recognize the importance of the protection of its domestic animals against these plagues. Last year three million dollars were appropriated for the use of the Bureau of Animal Industry in the control and eradication of animal diseases in the United States, and yet this sum is small compared with the expenditures of European governments for similar work. Through dear experience Europe has learned to appreciate the value of its live stock industry.

WORK IN OTHER STATES.

The following is a tabular representation of the live stock valuation of some of our more progressive States, and the sums of money appropriated by each for the protection of its domestic animals against contagious diseases:

State.	Live Stock Valuation, U. S. Census, 1900.	Annual Approp- riation for 1909, or last year reported.
Colorado	\$ 49,359,781	\$ 20,000
Illinois	186,856,120	64,420
Idaho	21,289,853	12,000
Kansas	186,317,248	17,700
Maine	16,298,422	65,000
Massachusetts	14,730,169	77,000
Minnesota	86,620,643	111,000
Missouri	154,295,363	29,200
Nebraska	142,769,629	12,220
New Hampshire.....	10,062,877	15,000
New Jersey.....	16,269,548	37,000
North Dakota	41,951,659	99,000
Pennsylvania	97,424,119	353,000
South Carolina.....	19,167,229	14,000

Rhode Island, not much larger than two Tennessee counties, appropriated \$20,000.

TENNESSEE'S APPROPRIATION.

Tennessee, with a live stock valuation of more than \$106,000,000, appropriates only \$5,750 annually for its protection against the invasion of fatal contagious diseases.

This amount is inadequate, and efficient live stock sanitary control work, commensurate with the great interests involved, is impossible with this small sum at our disposal.

For the protection of the live stock industry valued at \$106,000,000, located on 245,509 farms in 96 counties, scattered over an area of 42,500 square miles, threatened on all sides by invasion of diseases from other States, \$5,750 annually is not enough to begin the development of an efficient system of protection and control. The time has come when the live stock owner and raiser in Tennessee should be encouraged, and the first step necessary in the encouragement of this industry is to protect it.

RECOMMENDATIONS.

In order to adequately protect it, an annual appropriation of at least \$25,000 should be placed at the disposal of the Agricultural Department for this purpose. In my opinion there is no doubt that the valuation of live stock in Tennessee could be doubled within the next five years, were the necessary protection afforded. Instead of being only \$106,000,000, it would be valued at over \$200,000,000.

Of course I fully understand that the importance of this character of work to the general welfare of our commonwealth is fully under-

stood and duly appreciated by you, as it has had full commendatory expression from you in various discourses to assemblages of our citizens throughout the State in public addresses and otherwise.

It has been my constant aim to adopt the most advanced views on all matters coming within the scope of the requirements of the laws relating to my duty in protecting the health of our live stock. All measures for the welfare of our live stock industry have been soberly considered, and I have so far never plunged headlong into untried fields of experimentation; consequently I have never been required to recede from any position I have taken. The various regulations have been enforced in a practical manner, without ostentation, and with as little conflict as could be expected, considering the nature of the work, which is at all times of a repressive nature, and invites antagonism from the peculiar conditions which naturally arise in placing restrictions on personal property or removing, from the possession of various owners, diseased animals which must be slaughtered if protection is to be afforded the community.

FINANCIAL STATEMENT.

Following is the financial statement of the Live Stock Department from June 1, 1911, to December 19, 1912:

Balance to credit of department from former administration	\$1,126 83
Biennial appropriation 1911 General Assembly..	8,100 00—\$9,226 83
Total expenditures for sanitary control work during same period.....	\$7,131 16
Personal expenses of State Live Stock Inspector.	627 78—\$7,758 94
Balance to credit of Department December 19, 1912	\$1,467 89

Rigid economy has at all times been practiced, commensurate with the best interests of the work.

ATTITUDE OF LIVE STOCK OWNERS.

That my efforts thus far in protecting the live stock of this State from disease, and stamping out those contagious diseases already in our midst, is appreciated, is shown by the friendly attitude of the live stock owners themselves. Several distinct reforms in the methods of conducting live stock sanitary control work in this State have been already instituted.

At first efficient work by this Department was greatly handicapped for lack of practical rules and regulations by which outbreaks could be

satisfactorily controlled. The rules and regulations formerly in vogue were antiquated and inefficient in the control, suppression and eradication of contagious and infectious animal diseases along scientific lines, and in accordance with modern methods.

SPECIAL ORDERS ISSUED.

You will observe that we found it necessary, during the first year, to promulgate Special Orders—Nos. 1 to 15 inclusive—in order to make temporary provisions for conducting the work.

Of course these various Special Orders served the purpose of tiding us over the temporary crisis which existed between the time of my induction into office and the time of promulgation and issuance, in due form, of our 1912 rules and regulations.

The Federal Government has realized our handicaps and appreciated our efforts at self-preservation. They have heartily cooperated with us in our every undertaking, and this Federal cooperation accounts largely for the excellent results accomplished. They have respected every suggestion and have complied with every request which I have made.

The State veterinarians of the various States of the Union evince confidence in our work, and Tennessee's live stock are admitted to any and all States without question. No State has seen fit to quarantine against us. This is in my opinion a great compliment to our efforts.

QUARANTINE AGAINST THE STATE OF ILLINOIS.

On account of inefficient live stock sanitary control laws, and the lax enforcement of those which they have, many diseased animals were being brought into Tennessee from Illinois at frequent intervals. We considered such shipments of diseased animals a constant menace to the health of animals of this State; hence the following quarantine order:

"Section 55. All live stock of any class originating in the State of Illinois, destined to any point in the State of Tennessee, must be accompanied by a health certificate issued by a veterinary inspector of the United States Bureau of Animal Industry, or the State Veterinarian or his assistants or deputies. The health certificate shall certify that the animals are free from the following diseases or exposure thereto; Glanders, tuberculosis, sheep scabies, cattle scabies, haemorrhagic septicaemia, cow pox, lung worm, stomach worm, Johne's disease, black leg and nodular disease."

Since this order was promulgated, a total of 12,610 animals have

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Agricultural Special, Operated by the Department of Agriculture from July 1 to Aug. 23, 1912. View near Ashland City, Tenn., on Aug. 23.

come into Tennessee from Illinois. Of these 6,597 were horses, and 6,013 mules. These animals were accompanied by a health certificate in each and every instance. No violations have been reported. Illinois enjoys the unequaled distinction of being the only State in the Union against which Tennessee has found it necessary to quarantine. Just how long it will be necessary to maintain this quarantine against Illinois, I am unable to say.

A trip to Illinois, only a few days ago, convinces me of the wisdom of this quarantine order, and I am frank to say that until live stock sanitary control work is considerably improved in that State, our order will remain in full force and effect. In fact, if conditions in Illinois become much worse, it may be necessary to prohibit shipments from that State into Tennessee altogether.

BLACK LEG IN CATTLE.

Black leg is an acute infectious disease caused by a specific germ. The disease does not spread from animal to animal by simple contact, but the infection takes place from a common cause or source, and this common source is the black leg infected soil. Like tetanus and many other diseases, black leg follows wound infection. This means that before black leg germs can enter the animal's body, the skin must be first abraded or broken by a wound. The germs cannot penetrate the healthy normal skin. Black leg attacks sheep and goats as well as cattle. It is a disease of young cattle, rarely attacks any cattle over two and one-half years old. Thin skin breeds are more susceptible than those endowed with thick skin. Black leg has been reported from about 45 counties in Tennessee during the past two years.

The money loss from black leg during the past year has been considerably less than that of former years. This is accounted for, in part, by our more intelligent and progressive farmers protecting their herds by promptly using vaccine whenever an outbreak of black leg took place in their neighborhood. Our cattle owners have become well educated to the importance of prompt vaccination whenever black leg makes its appearance. They have found that money spent for vaccine is a good investment. Black leg usually breaks out in a neighborhood about the same time or season each year. No systematic effort has been made to eradicate black leg. The symptoms, treatment and prevention of this disease were discussed in Talks to Farmers No. 70.

PINK EYE OF CATTLE.

Since "Pink Eye" (Infectious Ulceration Keratitis) has appeared

in many counties of Tennessee, to the extent of becoming what may properly be termed "epidemic form," I consider it of sufficient importance to mention it in this report.

Pink eye is a local infectious disease which attacks the whole or part of the eyeball. It is technically known and described as Infectious Ulcerative Keratitis. This disease has been observed in the cattle herds of Tennessee for more than thirty years. The monetary loss which results directly and indirectly from its ravages in this State amounts to many thousands of dollars annually. It is a "germ disease" and is highly contagious. The period of incubation, which means the time from exposure to the development of first symptoms, varies from five to nine days. When one animal in a herd develops pink eye, many other animals in the same herd invariably become affected in a short time. I have frequently observed whole carloads of cattle affected with this disease in the local stock yards at Nashville.

Pink eye in cattle and pink eye in the horse are two separate and distinct diseases. Pink eye in the horse is not transmissible to cattle, neither is pink eye in cattle transmissible to the horse; however, pink eye in cattle is readily transmitted to sheep and goats, hence the presence of either of the latter species of animals should always be taken into consideration whenever pink eye appears among the cattle on a farm.

This disease was described, and proper treatment suggested, in Talks to Farmers, No. 68.

APTHOUS STOMATITIS.

Apthous stomatitis, or "Sore mouth and feet" of cattle, is causing much concern to the cattle raisers of the Southern States in general, and of Tennessee in particular. Its ravages have been particularly prevalent and widespread during the past season. The direct losses by death have by no means been great. The indirect losses on account of loss in milk and flesh have amounted to thousands of dollars.

From the number of telephone and telegraph messages and letters received, I would judge that the anxiety occasioned wherever this disease has appeared was great. Most stockmen, and some few veterinarians, were under the impression that an outbreak of the well-known "European foot and mouth disease" had again made its appearance in America.

The symptoms are similar in almost all material respects to those of "European foot and mouth disease." Even an expert cannot distinguish between the two diseases by the symptoms presented or by physical examination. I diagnosed the disease by watching its development and spread in the individual dairy herds where it appeared. I

observed that the cases developed slowly, only a few cows in a herd becoming diseased. Hogs and sheep did not contract it, which convinced me that we had aphthous stomatitis, and not "European foot and mouth disease" to contend with.

The disease is not contagious. It does not spread from animal to animal by contact. The causative agent is a fungus or form of mould which grows—at certain seasons of the year, and under certain atmospheric conditions—on grasses and forage crops.

The symptoms, treatment and prevention of this disease were described in Talks to Farmers, No. 23.

GLANDERS.

Glanders is a contagious disease of the horse, transmitted from horse to horse, and from horse to man by contact with the glandered animal itself, or cars, curry combs, brushes, bridles, halters or harness which have become infected with discharges from the diseased animal. In the horse, glanders runs both in acute and chronic course, and the lesions of the disease are principally confined to the lymphatic system and the mucous membrane of the nose. In man, the disease develops in the acute form, and death ensues in from five to twenty days. It is one of the most deadly of all human diseases, and one of the most loathsome of all animal diseases.

When the disease manifests itself in the skin by presenting nodules which later break down and become ulcers, it is known as "farcy." Glanders in America is principally confined to the range horses of the West and Northwestern States; however, on account of the constant shipment of this class of live stock into Tennessee, glanders is being brought into this State at frequent intervals, in spite of our rules and regulations and our effort to prevent its introduction. During the past two years horses suffering from glanders have been reported, appraised and killed in no less than ten counties in Tennessee. Approximately forty-five or fifty horses have been disposed of in this manner.

Glanders is a germ disease, caused by the *baccillus mallei*, which was first isolated and described in the year 1882.

It has been more prevalent in Sullivan than any county in the State.

The symptoms and other facts in regard to the control and suppression of this disease were described in Talks to Farmers, No. 73.

LIP-AND-LEG ULCERATION.

During the months of June, July and August, 1912, lip-and-leg ulceration was quite prevalent among sheep in this State.

While there is no occasion for alarm as a consequence of this disease among the flocks, it would be a wise procedure on the part of the sheep owners to familiarize themselves with the character of this disease. It yields readily to local treatment.

There were shipped to market from Tennessee during the above named months, 5,344 sheep in 28 shipments in which one or more animals presented lesions of lip-and-leg ulceration. The local yards in which those sheep originated were cleaned and disinfected under supervision, and the cars at destination were treated likewise.

The counties from which sheep infected with lip-and-leg ulceration were shipped, are as follows:

Putnam	1 Shipment
Davidson	2 Shipments
Bedford	4 Shipments
Marshall	2 Shipments
Lincoln	6 Shipments
Giles	2 Shipments
Williamson	2 Shipments
Trousdale	2 Shipments
Sumner	1 Shipment
Rutherford	1 Shipment
Wilson	1 Shipment
Smith	1 Shipment
Maury	3 Shipments
Lawrence	1 Shipment

If lip-and-leg ulceration (necrobacillosis) becomes any more widespread, some definite arrangements will be made for its control and suppression. This disease was accurately described, and treatment suggested, by Dr. R. G. Lawton, U. S. Inspector in Charge, in Talks to Farmers, No. 67.

SHEEP SCAB.

At the beginning of my term of office (July 1, 1911) I found by a very superficial examination that sheep scab was making rapid inroads into the flocks in 11 counties of the Middle Division of the State. About this time the Federal Government had threatened drastic measures if the disease was not suppressed. This meant that our State was on the verge of quarantine on account of this disease. Quarantine would have completely paralyzed our sheep industry.

The Federal Bureau of Animal Industry was appealed to for aid. This resulted in Drs. R. G. Lawton, Ferne Keselring and H. H. Cohenour being sent to Tennessee for the purpose of cooperating with the State and counties in sheep scab eradication. All of these men are graduate veterinarians of many years experience in this particular

field of live stock sanitary control work. They arrived about August 15, 1911. Official Order No. 7, entitled—

“Rules and regulations promulgated by the Commissioner of Agriculture and State Live Stock Inspector, under authority conferred by the Acts of Tennessee, 1901, 1907 and 1909. To eradicate and prevent the further spread of sheep scabies in Tennessee”—

effective on and after September 7, 1911, was promulgated September 1, 1911. This was the beginning of systematic sheep scab eradication work in Tennessee. For the four and one-half months of 1911, 49,024 inspections were made, of which number 3,229 were found infected, and 2,801 of these were dipped under official supervision.

For the year ending December 15, 1912, there were inspected 187,691, and of this number 4,090 were found infected with scab, and 12,370 dipped. This makes a grand total of 242,328 inspections; 7,329 infected and 15,177 dipped. Aside from the 15,177 dippings which was done under supervision, there were approximately 15,000 precautionary dippings that we know of, but these latter were not dipped under official supervision.

The remedies used in all official dippings were those that are approved by the State of Tennessee, namely: Nicotine, tobacco extract and lime-and-sulphur dip, which had first to be approved by the U. S. Bureau of Animal Industry before being recognized by the State Department of Agriculture.

During the year previous to the taking up of this important work, there were shipped from Tennessee 5,000 scabby sheep to market centers, while during the period covered by cooperation work on sheep scab eradication there were no scabby sheep shipped from Tennessee. The above is a good example of what can be accomplished by hearty cooperation in the eradication of animal diseases. Today we know of no cases of sheep scab in this State.

Infection was located wholly in Middle Tennessee, and had made extensive inroads in the flocks of Sumner, Montgomery, Davidson, Wilson, Smith, Rutherford, Cannon, Bedford, Williamson, Maury, Marshall and Giles counties. Inspections were also made in all the other counties of the State, containing 4,000 or more sheep, making a total of 51 counties in which work was done.

It is very gratifying to state that in practically every instance, the cooperation of the county authorities and the flock owners indicated an appreciation of the line of work being done in their interest.

Finally, permit me to say that the above work has been accomplished

in a thorough manner, and done without antagonizing those interests that we have come in contact with. Also, it is the first instance in which eradication of an animal disease has been completed without resorting to a general quarantine.

The cost of this cooperation to the United States Bureau of Animal Industry has been about \$9,000, and to the State and counties approximately \$12,000.

The completion of eradication of sheep scab from Tennessee, especially after it had become so widespread, in so short a time as 16 months, is an accomplishment to which we may point with pride.

To Dr. R. G. Lawton, U. S. Veterinary Inspector in Charge, belongs much credit for the results accomplished.

We hope, by rigid enforcement of dipping regulations, whenever sheep are brought from other States into Tennessee, to prevent the re-infestation of the State.

JOHNE'S DISEASE.

Johne's disease (chronic bacterial dysentery) caused by an acid fast bacillus, has been found and positively diagnosed in Franklin, Sumner, Giles, Bedford and Wilson counties. Rigid quarantine was resorted to, and we hope by this means to be able to control its spread.

This disease was introduced into Middle Tennessee about six years ago by a shipment of cattle from Northwest Missouri.

ANTHRAX.

Anthrax, or "Charbon," the most deadly and dangerous disease in the whole category of contagious diseases, made its appearance last summer for the third time in the history of Tennessee. This outbreak was in Shelby County, where it invaded fourteen dairy herds and killed about 175 cattle and horses before we succeeded in eradicating it. The first outbreak of this disease was in Carroll County, about 22 years ago. The second outbreak occurred six years ago in a dairy herd in Davidson County, two and one-half miles north of Nashville.

Anthrax is the oldest known infectious disease. It is alluded to in the second Book of Moses, as the sixth plague of Egypt; in the third Book of Moses stress is laid on the possibility of its transmission from infected clothes to man.

Plutarch reports that Rome was visited about 740 B. C. with a severe epizootic or anthrax; Dyonicius of Halicarnassus, 488 B. C., and Livy, 425 B. C. describe epizootic or anthrax, in which the disease at first attacked cattle on the pastures, then those in the shed; it killed the animals, priests, herdsmen, country people, and finally wiped out

the entire population. Arabian physicians describe anthrax as "Persian fire."

The anthrax bacillus was the first disease-producing germ isolated, cultivated, stained and described. This was done in 1875, and to the late Prof. Robert Koch belongs the credit.

The disease is readily transmitted to the horse, ox, sheep, goat, dog, cat, and in fact to all animals, including man. The infection gets into the body through the respiratory tract, digestive tract and through skin abrasions. The losses range from 50 to 90 per cent of the animals infected.

It is transmitted through the water, feed, and by soil contamination, as well as through the meat and milk supply.

By resorting to vaccination, rigid quarantine and frequent inspection, we were enabled to control and eradicate this anthrax outbreak at the small expense to the State of less than \$200. In fact, the disease did not spread to a single additional farm after we took charge of the situation.

The health authorities of Shelby County and the city of Memphis deserve much commendation for their diligent efforts and hearty cooperation in handling this anthrax outbreak.

HOG CHOLERA.

Of all the animal diseases now prevalent in Tennessee, hog cholera causes by far the greatest financial loss. It is prevalent at almost all seasons of the year in almost every county in the State. The losses in Tennessee during the past year from hog cholera have been unusually heavy. Conservative estimates have placed the losses from this one disease during the past year in this State at from two to three million dollars.

Any disease which causes a loss of two million to three million dollars in a single year in a State as small as Tennessee, certainly deserves more than passing consideration of the farmers, swine breeders and lawmakers; hence I believe I am warranted in directing your attention to this disease and its dangers to the swine industry. Its control and suppression is a problem from which we, as State authorities, shudder. As yet we have not seen our way clear to undertake systematic hog cholera eradication work. Possibly some future General Assembly may make the necessary appropriation to stamp out this deadly and widespread scourge to the swine raising industry. At present all we can do is to advise the swine raisers to use the Dorsett-Niles hog cholera serum freely at their own expense.

State aid is out of the question at the present time. Whenever we can get an appropriation sufficiently large to establish, equip and maintain a hog cholera serum laboratory, I will feel justified in undertaking the direction of hog cholera eradication work. The free use of anti-hog cholera serum is the method by which we eventually hope to stamp out hog cholera. The Dorsett-Niles anti-hog cholera serum will certainly protect hogs against cholera, provided it has been properly prepared and scientifically administered, but it requires some instruction before any one is qualified sufficiently to handle this serum as it should be handled. We have found a great array of impotent serums on the market. Of course such serums will not begin to protect hogs against cholera.

Hog cholera is spread, in most instances, by public stock yards, running streams, public roads and turkey buzzards. This disease was described in Talks to Farmers, No. 75.

TEXAS FEVER.

Texas fever, the well known and easily recognized fatal Southern cattle scourge, probably first invaded the United States from Mexico over a century ago. The infection gradually spread northward from the Mexican border until about forty or fifty years ago, when it made its first appearance in Tennessee, and finally spread over 51 counties in this State. For many years its causative agent was unknown.

It was in the year 1887 that Cooper Curtis was the first to suggest the tick as the carrier of the infestation of this disease, but it remained for Smith and Kilborne, in 1889, to demonstrate that the tick did really transmit the disease. Of course for many years no one knew or even suspected that it was possible to eradicate this disease-producing tick. It was in the year 1894 that Cooper Curtis demonstrated the possibility of exterminating the fever tick.

About this time the first bulletins on this subject were gotten out by Mohler, Dalrymple and Morgan. To Myer, of Louisiana, belongs the credit for presenting the first bulletin calling attention to the economic importance of eradicating the tick. He placed the annual losses to the Southern States at \$100,000,000.

The early field work was done by Butler, of North Carolina, Cary, of Alabama, and Dinwiddie, of Arkansas. They demonstrated that tick eradication over large areas of infected territory was practical. They demonstrated beyond a shadow of a doubt that ticks could be eradicated

from any prescribed territory in a short time and at reasonable cost. In 1906 a committee from the Commissioners of Agriculture of the Southern States prevailed upon Congress to make the first Federal appropriation to begin the work. This appropriation amounted to \$82,500.

Dr. R. P. Steddon and W. P. Ellenberger did the pioneer work in Tennessee, but to Drs. J. A. Kiernan and R. E. Jackson the credit is largely due for the excellent results which have been accomplished in this State. As said before, the disease had spread to 51 counties, and the annual losses in this State from deaths of cattle from the disease and from the depreciation in value as a result of the handicap of quarantine restrictions, far exceeded \$1,000,000. This work of tick eradication has gradually progressed until now we have succeeded in freeing 44 whole counties of ticks, and those 44 counties have been released from quarantine. Only 7 counties and parts of counties remain in quarantine.

These great results have been accomplished in only a few years and at a very small expense to the State, counties and Federal Government, when we pause to consider the manifold advantages to the cattle raising industry which have accrued therefrom. However, the work is not yet completed, and the annual losses—even at the present time, as a result of the existence of this disease—will probably exceed \$300,000. Now is the opportune time to complete work in all of these seven tick-infested counties.

The tick can be destroyed now at less expense than later. The stockmen of these remaining quarantined counties can now profit by the experience of those who have already successfully conducted the work in the counties which have been freed of ticks and placed above the quarantine line. They have at hand the Twentieth Century method, the ideal way of killing ticks, viz: the concrete dipping vat and arsenical solution which are the boon to, and salvation of, the cattle raising industry in the Southern States. The dipping vat and arsenical solution are cheap and efficient, as well as practical, and are in my opinion the only weapons which will be used in the future in tick eradication work. From present indications the tick will be entirely eradicated and the whole State of Tennessee released from quarantine one year from this date, in which event Tennessee will enjoy the distinction of being the first State to entirely exterminate the Southern cattle tick.



Cow affected with *Apthous Stomatilis*. Observe the Arched Back on account of Sore Feet, Saliva dripping from mouth on account of sore mouth. Great loss of Flesh on account of inability to masticate food.



"Johnes' Disease" ten days before death. Observe Starry Coat, Emaciation, Swelling under Jaw, and Soiled Tail.

EXPENDITURES BY COUNTIES FOR TICK ERADICATION, 1911.

The following table shows the amount of money spent in tick eradication work in Tennessee by the Bureau of Animal Industry, and by counties, during 1911. Also the number of cattle inspected and the number of herds and cattle held under quarantine.

EXPENSE.			STATUS OF CATTLE.			
County	B. A. I.	County.	No. cattle inspected.		No. under quarantine Jan. 1.	
			Herds.	Cattle.	Herds.	Cattle.
Benton	\$2,250 14	\$1,116 05	6,201	22,294	250	779
Bradley .....	.....	220 00	131	1,028	16	39
Carroll	133 28	66 00	189	608	6	23
Chester	65 91	.....	.....	.....	..	....
Davidson	72 66	.....	2	523	..	....
Decatur	15 88	.....	.....	.....	..	....
Fayette	124 79	16 00	100	1,474	10	133
Fentress	378 16	200 00	568	2,155	15	102
Franklin	135 94	.....	12	403	2	10
Giles	181 25	1,272 00	2,182	23,455	15	185
Hamilton	1,863 12	7,966 00	26,969	115,327	374	2,179
Hardeman	1,599 08	2,393 65	10,096	86,667	522	5,229
Hardin	18 28	.....	.....	.....	..	....
Haywood	46 09	.....	.....	.....	..	....
Henderson	222 18	245 25	1,057	8,065	..	....
James	61 63	95 50	193	847	17	83
Lawrence	1,144 75	1,872 25	9,016	40,367	138	680
Lewis	41 33	32 52	144	628	9	27
Lincoln	542 06	786 00	842	6,566	27	258
Madison	112 39	337 00	619	5,540	15	129
Maury	6 85	6 00	41	350	..	....
McNairy	49 33	.....	.....	.....	..	....
Moore	5 58	.....	.....	.....	..	....
Obion	48 35	.....	.....	.....	..	....
Overton	636 74	222 00	697	3,238	15	178
Pickett	108 51	76 00	239	659	11	37
Polk	1,394 15	1,208 79	2,814	52,567	75	1,060
Rhea .....	.....	204 00	584	8,181	12	67
Rutherford	27 45	.....	8	69	..	..
Shelby	77 83	249 00	220	2,407	9	122
Warren .....	.....	48 00	30	133	1	4
Wayne	40 63	.....	..	..	..	..
Williamson	37 60	.....	3	5	..	..
Total	\$11,442 94	\$18,632 01	62,957	383,556	1,539	11,304

EXPENDITURES BY COUNTIES FOR TICK ERADICATION WORK, 1912.

Report showing amount of money spent in tick eradication work in Tennessee by Bureau of Animal Industry and by counties during 1912, up to November 30; also the number of cattle inspected and the

number of herds and cattle held under quarantine December 1, 1912.

EXPENSE.			STATUS OF CATTLE.			
County	B. A. I.	County.	No. cattle inspected.		No. under quarantine Dec. 1.	
			Herds.	Cattle.	Herds.	Cattle.
Benton	\$ 828 87	\$ 709 00	2,875	13,396	14	76
Bradley	94 37	76 00	19	159	0	0
Carroll	208 23	303 50	701	3,657	74	302
Chester	650 92	657 00	4,021	19,659	220	1,455
Coffee	63 78	20 00	33	961	3	13
Davidson	86 29	21 00	9	2,232	0	0
Decatur	1,005 69	973 00	7,314	33,926	144	962
Fayette		60 50	105	1,584	2	11
Fentress		124 50	188	451	0	9
Franklin	56 22	54 00	66	875	1	51
Giles	62 81	930 00	1,451	17,179	4	72
Hardeman	1,720 20	2,118 38	13,619	115,962	321	3,460
Hamilton	1,599 42	6,107 00	26,333	127,550	38	310
Hardin	1,512 24	2,117 25	20,183	80,289	1,388	5,367
Henderson	881 97	2,403 00	11,445	51,274	247	2,195
James	88 22	74 00	323	2,274	9	48
Lawrence	782 14	1,005 75	2,890	19,305	22	479
Lewis	73 05	26 00	96	454	15	56
Lincoln	127 02	464 00	278	3,171	0	0
Madison		272 00	297	2,696	1	13
McNairy	1,051 77	1,728 50	21,116	69,990	1,859	7,330
Moore	35,54	8 00	11	420	2	59
Pickett		9 50	8	73	0	0
Polk	98 84					
Rhea	22 93	2 00	5	48	0	0
Rutherford	25 09		3	71	0	0
Shelby		237 00	180	3,405	1	61
Wayne	697 04	1,679 75	4,816	36,194	80	448
Total	\$11,772 65	\$22,180 63	118,385	607,255	7,647	22,777

In the counties of Haywood, Maury, Obion, Overton, Warren and Madison the work of tick eradication was entirely completed during 1911.

DIPPING VATS IN COUNTIES.

Report showing the number of dipping vats in counties in Tennessee which were in operation during the season of 1912:

County.	Number of Dipping Vats.
Chester	30
Decatur	25
Hamilton	2
Hardeman	24
Hardin	47
Henderson	16
Lawrence	12
Lewis	1
McNairy	57
Wayne	26

Total240

SUMMARY FOR TWO YEARS.

Total expense to Federal Government.....	\$23,215 59
Total expense to counties	40,812 64
Total number of herds inspected	181,342
Total number of cattle inspected.....	909,811
Total number of herds quarantined.....	9,186
Total number of cattle quarantined.....	35,081

The total number of quarantined premises in the State, exclusive of Polk County, at this date, as they appear on the report, is of course much larger than the number existing at the beginning of 1911, due to the number of new counties beginning work the present season. A large number of the quarantined premises existing in these counties at this time it is not thought will show any tick infestation next season, but owing to reports of such premises having been rendered collectively at dipping vats on the regular dipping days, the records are not in such shape as to warrant the removal of premises from the quarantined records.

The above work was done under supervision of Dr. J. A. Kiernan, U. S. Veterinary Inspector in Charge, and was directed from Nashville. This includes all tick eradication done in Tennessee with the exception of that done in Polk County. The work in Polk County was supervised by Dr. E. M. Nightbert, U. S. Veterinary Inspector in Charge, and was directed from the Atlanta, Georgia, office.

 POLK COUNTY.

The following is a detailed report of the work of tick eradication and conditions in that part of Polk County, Tennessee, known as "Ducktown Basin," at the close of operations November 30, 1912. This area is that section of Polk County described in B. A. I. Order No. 187, issued March 15, 1912, and effective March 25, 1912.

The above area was systematically controlled and the cattle inspected and disinfected according to ranges, as follows:

Ducktown Range	125 cattle
Stewart Town Range.....	73 cattle
Cole Town Range	65 cattle
Copper Hill Range	60 cattle
Bell Town Range	71 cattle
Postelle Range	76 cattle
McAllister Hill Range	42 cattle
Turtle Town Range	250 cattle

Total	762 cattle
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From June 21, 1912, to October 21, 1912, a total of 47 cattle were found carrying very slight infestation of ticks, briefly as follows:

September 23, 60 cattle inspected. Small ticks found on two cows.

September 24, 65 cattle inspected. Few mature (not engorged) ticks found on 16 cattle.

September 25-27, 76 cattle inspected. Few small ticks found on six animals.

September 28-October 7-12-21, 102 cattle inspected. Very few mature (not engorged) were found on 11 head of cattle.

The ranges were gone over daily, inspections made and the cattle disinfected every two weeks under supervision. The appearance of animals showing infestation were traced from ranges on the Georgia side, where the same systematic work was in progress, but it not being possible to get all cattle all the time at two weeks intervals, such animals escaped disinfection for a few days.

About 1,398 cattle used the ranges of "Ducktown Basin," of which number all were disinfected regularly at twenty-four official spraying pens. At each pen all cattle were secured, closely examined and disinfected with arsenic solution. When it is said this territory is free of infection, it is assumed according to records of work, because there are many conditions existing that were exceedingly difficult of control. Considering all conditions, however, from a practical standpoint, we believe the territory is free of infection.

REPORT OF CONDITIONS IN THAT PART OF POLK COUNTY RELEASED AS A
WHOLE FROM QUARANTINE.

In this territory there are held in quarantine for further investigation, 18 premises, 580 cattle. This is an open range area, and comprises a section of country extending from Austral, Tennessee, to about one mile west of Conasauga, Tennessee, a distance of twenty-five miles, and approximately five miles wide. Two vats have been in operation in this territory, where slight infestation of ticks were found on a few cattle. Three additional vats have been arranged for and are partially installed. They will be completed by January 1, 1912. This will assure thorough control and completion of the work in this section of the county.

STATEMENT OF EXPENSES.

From March 1 to November 30, 1912, the total expense covering

work in both the released and quarantined area of Polk County was as follows:

To the State	\$ 876 15
To the county	1,233 00
Total	\$2,109 15
Expense to Bureau of Animal Industry in co-operation with State and County officials and citizens	2,144 39

SUPPLEMENTARY.

More than 175 citizens of Polk County, Tennessee, and Fannin County, Georgia, whose commercial interests are identical, have signed individual agreements to offer all aid to officials in keeping the territory free from Texas fever infection. It is considered that the territory above described, including Fannin County, Georgia, is free of infection, and same will be recommended for release from Federal and State quarantine, effective April 1, 1913.

It is estimated that 12,000 cattle were controlled, inspected and disinfected regularly every two weeks from March to November, inclusive, in the Polk County territory. We consider the results of work successful, but it must be kept in mind that the territory is a vast open range section, and that cattle may travel many miles and commingle, therefore a strenuous effort should be kept up that a thorough knowledge of conditions may be had for another season.

I consider this a fine cattle grazing section. The citizens appreciate the efforts of the State and county officials and the co-operation of the Bureau of Animal Industry. They should be encouraged to take steps to improve the stock, because cattle will be a great asset in the permanent up-building of farms in this region.

TERRITORY RELEASED FROM QUARANTINE.

During the year 1911 the following counties and parts of counties in Tennessee were released from quarantine:

That portion of Polk County south of the Hiwassee River and west of the L. & N. R. R. That portion of Hamilton County north of the Tennessee River. That portion of Lawrence County south of the following described line: Beginning where the Pulaski-Lawrenceburg public road intersects the Giles County line; thence in a westerly direction following said road to Lawrenceburg; thence following the Waterloo road west two miles; thence northwesterly following the Waterloo

road west two miles ; thence northwesterly following the Lawrenceburg and Waynesboro public road to the Wayne County line.

That portion of Hardeman County west of the Illinois Central Railroad.

During the year 1912, there will be released from quarantine in Tennessee the following counties or parts of counties :

That portion of Wayne County north of a line beginning at the point where the Lawrenceburg-Waynesboro public road crosses said county line, thence westerly along said road to Waynesboro in said county, thence westerly along the Waynesboro-Clifton pike to the north branch of Hardin Creek, thence along said branch to Hardin Creek, thence along said Hardin Creek to the Wayne-Hardin County line.

That portion of Decatur County east of the Camden-Decaturville public road and north of Lick Creek.

That portion of Benton County south of the N., C. & St. L. Railroad and west of the Camden-Coxburg and Sugar Tree public road.

That portion of Hardeman County east of the Illinois Central R. R., excepting the area enclosed by the following described line: Beginning at a point where the Bolivar-Pocahontas public road intersects Spring Creek, thence following southeasterly along said road to Carter's Creek, thence along said Carter's Creek to the Tallahatchie River, thence southerly along said Tallahatchie River to a point where said river intersects the Southern Railroad, thence along said railroad in a westerly direction to the point where Spring Creek crosses said railroad, thence northerly along said Spring Creek to point of beginning.

That portion of McNairy County west and north of a line beginning at the point where the M. & O. Railroad crosses the Chester-McNairy County line, thence following along said railroad to the point where Muddy Creek Dredge intersects said railroad, thence following said Muddy Creek Dredge to Cypress Creek, thence following along Cypress Creek westerly to its intersection with the Southern Railway, thence following westerly along said railway to the McNairy-Hardeman County line.

QUARANTINED TERRITORY FOR 1913.

During the year 1913 the following described area in Tennessee will be held under quarantine pending the completion of tick eradication work.

That portion of Marion County south of the Tennessee River.

That portion of Wayne County south of a line beginning at the point where the Lawrenceburg-Waynesboro public road crosses said county line, thence westerly along said road to Waynesboro in said

county, thence westerly along the Waynesboro-Clifton pike to the north branch of Hardin Creek, thence along said branch to Hardin Creek, thence along said Hardin Creek to the Wayne-Hardin County line.

That portion of Decatur County west of the Camden-Coxburg Sugar Tree public road and south of Lick Creek.

That portion of Carroll County south of Mackey's Bridge and Levee road and east of the Big Sandy River to the Henderson County line.

The entire counties of Chester, Henderson and Hardin.

That portion of Hardeman County enclosed by the following described line: Beginning at a point where the Bolivar-Pocahontas public road intersects Spring Creek, thence following southeasterly along said road to Carter's Creek, thence along said Carter's Creek to the Tallahatchie River to point where said river intersects Muddy Creek, thence along Muddy Creek to the Southern Railroad, thence along said railroad in a westerly direction to the point where Spring Creek crosses said railroad, thence northerly along said Spring Creek to point of beginning.

That portion of McNairy County east of the following described line: Beginning at the point where the M. & O. Railroad crosses the Chester-McNairy County line, thence following along said railroad to the point where Muddy Creek Dredge intersects said railroad, thence following said Muddy Creek Dredge to Cypress Creek, thence following along Cypress Creek westerly to its intersection with the Southern Railway, thence following westerly along said railway to the McNairy-Hardeman County line.

APPROPRIATION RECOMMENDED.

I would respectfully recommend that the same appropriation (\$8,000) be made by the incoming General Assembly, as was made by the last General Assembly, for continuing tick eradication work to completion.

To show that the cattle owners and farmers of Tennessee are heartily in sympathy with us, and in favor of completing the work, I beg to refer you to the following resolution, which was unanimously passed at the Middle Tennessee Farmers' Institute, held at Nashville, December 3-5, 1912:

"WHEREAS, Texas fever tick eradication work in Tennessee has progressed satisfactorily under the direction of the Federal Government and the State; and

"WHEREAS, The completion of this work and the release of the whole State from quarantine at the earliest possible date is greatly desired; be it

"Resolved, That we go on record as favoring the same appropriation to the Agricultural Department (\$8,000.00) by the incoming General Assembly for this work as was made by the last General Assembly."

Texas fever was described in Talks to Farmers, No. 79.

BOVINE TUBERCULOSIS.

Since bovine tuberculosis is a contagious disease of cattle which is readily transmitted indirectly from cow to man through the medium of the milk and meat, it is a disease of much importance from a human health, as well as an economic standpoint. Bovine tuberculosis is gradually on the increase in Tennessee. It is becoming more widespread each and every year. It is cheaper to eradicate tuberculosis now than it will ever be again. It is to a cattle owner's interest, from a purely dollars and cents standpoint, to eradicate tuberculosis from his herd, to say nothing of the protection of the milk consuming public from consumption of tubercular contaminated milk from such diseased cows. Tuberculosis will put any man out of the dairy or cattle raising business as surely as hog cholera will put him out of the hog raising business. It requires a somewhat longer time to do so, because tuberculosis is a more slowly developing disease.

The twentieth century dairyman and cattle owner cannot afford to allow even one tubercular cow to remain in his herd, because one diseased cow now may mean five, ten or even twenty diseased cows six months or a year from now. The tuberculin test is the only means by which any one is able to diagnose tuberculosis with any degree of certainty in cattle. The tuberculin test is harmless when applied to healthy cattle. The tuberculin itself is the chemical product of the tubercle bacilli. It is a sterile product. There are no live germs in it. When injected into a healthy cow it has no effect, but when injected into a tubercular or diseased animal it causes an elevation of the temperature at least two degrees.

In my opinion it is possible and entirely practical, at a reasonable expense, and in a short period of time, to entirely eradicate bovine tuberculosis from the dairy and breeding herds of this State. The present and future welfare of the live stock industry of Tennessee—to say nothing of safeguarding the health of the people of the State—demands that the spread of this disease be checked.

Statistics indicate that 2 per cent of the dairy cattle of Tennessee are affected with tuberculosis. If these 2 per cent of diseased cattle are allowed to remain in the herds, the probabilities are that in two years

from now 4 per cent of the cows will have become infected. In my opinion, the incoming General Assembly should seriously consider the advisability and feasibility of providing ways and means for enabling the Agricultural Department to tuberculin-test every dairy and breeding cow and every bull in the State. The present and future welfare of our cattle industry demands it. The U. S. Bureau of Animal Industry has already offered to heartily cooperate with the State in this work whenever we make provisions to begin it.

As evidence of the fact that the farmers and stockmen favor such action, I beg to refer you to the following resolution, which was unanimously adopted by the Middle Tennessee Farmers' Institute, held at Nashville, December 3-4-5, 1912.

"WHEREAS, Bovine tuberculosis is universally recognized as a deadly and dangerous disease, not only to cattle and hogs, but to the milk and meat consuming public; and,

WHEREAS, The available statistics plainly show that this disease is rapidly on the increase each and every year in Tennessee; and

"WHEREAS, In the opinion of those in position to know, it is possible and entirely practical, at a reasonable expense, in a short period of time, to entirely eradicate bovine tuberculosis from the dairy and breeding herds of this State; and

"WHEREAS, The present and future welfare of the live stock industry of Tennessee—to say nothing of safe-guarding the people's health—demands that the spread of this disease be checked; be it

"*Resolved*, That we urge upon the incoming General Asssmbly the importance of passing the necessary laws and making an adequate appropriation to the State Department of Agriculture to enable it to take the necessary steps for the control, suppression and eradication of bovine tuberculosis without further delay; be it further

"*Resolved*, That the Secretary be directed to send copies of this resolution to the Governor, Commissioner of Agriculture, and to the Chairman of the Agricultural and Sanitary Committees of both the House and Senate immediately after the organization of these law-making bodies."

SUMMARY OF WORK ALREADY DONE.

Number of cows tuberculin tested	18,702
Number which reacted (tubercular)	375
Number of herds tested	1,436
Per cent of cows found tubercular	2%
Average number of cows in herds	13

DAIRY AND BREEDING CATTLE BROUGHT INTO TENNESSEE ACCOMPANIED
BY TUBERCULIN TEST CERTIFICATE.

Chapter 475, House Bill 189, passed April 27, 1909, and approved April 27, 1909, entitled, "An Act to protect the health of animals in Tennessee," provides that all cattle brought into the State for dairy and breeding purposes shall be accompanied by a health certificate including the tuberculin test. In compliance with this law, 18 shipments have been received, consisting of 15 bulls and 258 cows, total 273.

I consider this law of great protection to our cattle industry, as it has already prevented the importation of several diseased animals. We expect to continue to make diligent efforts to enforce this law whenever dairy and breeding cattle are to be brought from other States into Tennessee. No violations have been reported.

Bovine tuberculosis was described in Talks to Farmers, No. 77.

SPECIAL INVESTIGATIONS.

Special investigations have been made as follows:

John's Disease.—1 outbreak in each of the following counties: Franklin, Bedford, Sumner and Wilson.

Anthrax.—1 outbreak in Shelby County.

Hog Cholera.—1 outbreak in each of the following counties: Robertson, Montgomery, Marshall, Lincoln, Franklin, Rutherford, Humphreys, DeKalb, White, Smith, Gibson, Henderson Haywood, Shelby, Sumner and Hickman; 2 outbreaks in Fayette and 3 outbreaks in Davidson.

Glanders.—1 outbreak in each of the following counties: Lauderdale, Sequatchie, Henderson, Haywood, Wilson, Lake, Weakley, Obion and Humphreys, and 3 outbreaks in Giles, 2 outbreaks in Davidson, 2 outbreaks in Sumner, and 3 outbreaks in Sullivan.

Black Leg.—1 outbreak in each of the following counties: Lauderdale, Crockett, Madison, Henderson, Marshall, White, Coffee, Franklin, Wilson and DeKalb.

Forage Poison.—1 outbreak in Cocke and Maury; 2 outbreaks in Williamson.

Nodular Disease.—1 outbreak in each of the following counties: Davidson, Gibson, Williamson, Knox, Putnam and Hawkins.

APPRAISEMENT AND SLAUGHTER.

Under authority conferred by Section 10, Chapter 156, Acts 1901, numerous animals affected with bovine tuberculosis, glanders and John's disease, have been appraised and slaughtered at county expense, in order to eradicate these diseases. The appraised values in some instances have been excessive, and this proved to be quite a

financial burden on a few of the counties. In order to protect the counties, and at the same time derive the beneficial effects of the law, I would urgently recommend that Section 10, Chapter 156, Acts 1901, be amended so as to read as follows:

"Be it further enacted, That whenever, in the opinion of the State Live Stock Inspector, the public safety demands the destruction of any animal or animals, under the provisions of this Act, he shall, before ordering the killing or slaughtering of the same, appoint three (3) competent and disinterested freeholders, who shall be affirmed or sworn before proceeding to act, and they shall make a just and true valuation of said animal or animals to be so killed or slaughtered, and in valuing shall consider the health and condition of the animals when killed. In no case shall the owner be awarded in excess of two-thirds the market value of the animal. Such appraisal shall in no case exceed twenty-five dollars (\$25) for a cow, and sixty-five dollars (\$65) for a horse or mule, except in the case of pure bred cattle and horses, when the pedigree shall be proved by certificates of registry from the herd or record book where registered, in which case the maximum appraisal value shall not exceed one hundred dollars (\$100). The Board of Appraisers shall make and deliver a written certificate, setting forth all the essential facts in the case to the lawful owner, who shall present the same for payment to the Chairman of the County Court of the county in which such animal or animals are so killed, or slaughtered, and the same shall constitute a county charge, to be paid as other claims against the county are."

UNIFORM INTERSTATE HEALTH CERTIFICATE.

For many years each State adopted and used a health certificate of its own design for interstate shipment. This meant that the wording and design of health certificates differed in as many respects as we had States. Of course such ununiform proceedings caused much confusion among the State officials, inspectors and transportation companies. About a year ago, Dr. Ray Powers, State Veterinarian of South Carolina, to obviate this existing confusion, conceived the idea of a uniform health certificate. By correspondence and otherwise, he finally secured the unanimous consent of the officials engaged in live stock sanitary control work of all the States to adopt a uniform health certificate. Experience has already taught us that the adoption of this uniform certificate greatly simplified matters pertaining to the interstate movement of live stock. When accompanied by this form of certificate, live stock may be moved from Tennessee into any other State of the Union without the danger of detention en route for lack of proper credentials.

Duplicate to be mailed promptly to the State Veterinarian of the State to which shipment is destined.

Address:

There were taken from this lot head, which reacted to the test.

Car No. _____ Shipped via _____ (Signature) _____

I hereby certify that Dr. _____ is a legal practitioner, and his name is on my list of Authorized Inspectors to make Tuberculin and Mallein tests and to issue Health Certificates for shipment of animals from Tennessee into other states. I hereby approve this certificate as issued by Dr. _____ and certify the animals for acceptance for shipment to destination.

Edw. M. L.

EDUCATIONAL CAMPAIGN.

During the years of 1911-12 an effort has been made to place the work of this Department before the citizens of Tennessee in its proper light.

Interviews and specially prepared articles for publication have appeared at frequent intervals in most of the county and State papers on the following diseases:

Anthrax, Texas fever, John's disease, hog cholera, black leg, glanders, sheep scab, lump jaw, aphthous stomatitis, stomach worm, pink eye, lung worm, leuco-encephallitis, sneezeweed poison, phytolacca poison, hydrophobia, etc.

LIVE STOCK DEMONSTRATIONS.

I have accompanied the two agricultural trains which toured the State under the direction of the Commissioner of Agriculture in co-operation with the railroads. Live stock exhibits were a part of the equipment of each of these trains.

Typical animals and poultry of several breeds were carried. In my opinion, the beneficial effects of these live stock demonstrations will be far-reaching.

Over 300 public addresses to 325,000 people have been made. Several thousand bulletins, circulars and booklets pertaining to the several contagious and infectious diseases have been distributed through the mail and otherwise.

Much more good could be accomplished if our lawmakers could be prevailed upon to make an appropriation sufficient for the publication and distribution of a separate bulletin on each contagious animal disease, or, perhaps better still, a book for free distribution to the live stock owners; said book to be well bound, to contain not to exceed 300 pages, and be written and illustrated in such manner as to be intelligible to the average farmer.

Following this report are appended copies of special orders which have been promulgated for the control, suppression and eradication of contagious, infectious and communicable diseases.

CONCLUSION.

In conclusion, I wish to thank you, as Commissioner of Agriculture, for your interest, on all occasions, in the work and welfare of my Department, and for the painstaking consideration you have given each

and every recommendation which I have submitted to you, and the courteous treatment accorded me on all occasions.

My thanks are due, and are hereby extended, to all of the members of the Agricultural Department, the Governor, and to all other State officials; also the various county officials and railroads for their many courtesies and unstinted cooperation.

Respectfully submitted,

GEORGE R. WHITE, M.D., D.V.S.,
State Live Stock Inspector.

State Capitol, Nashville, Tenn., December 19, 1912.

SPECIAL ORDERS.

DEPARTMENT OF AGRICULTURE, STATE OF TENNESSEE.

OFFICIAL ORDER NO. I.

Rules and Regulations promulgated by the Commissioner of Agriculture and the State Live Stock Inspector, under authority conferred by the Acts of Tennessee 1901, 1907 and 1909.

EFFECTIVE ON AND AFTER JULY 1, 1911.

WHEREAS, It has been brought to the notice of this Department that tuberculin testing of dairy cows is being done in a haphazard, unreliable and irregular manner, by several veterinarians in Tennessee; and,

WHEREAS, The Ophthalmic and Cutaneous methods of using tuberculin are experimental, unreliable and misleading;

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby order:

SECTION 1. That the following shall constitute the minimum requirements for a tuberculin test which will be recognized by this Department:

(a) At least two (2) temperature readings three (3) hours apart shall be made before injection of tuberculin.

(b) The subcutaneous injection of the required amount of any fresh tuberculin, made by either the Federal Government or any reliable manufacturer of biological products.

(c) At least three (3) temperature readings on the twelfth, fifteen and eighteenth hours after the injection of the tuberculin must be made.

SEC. 2. Veterinarians making the tuberculin test in Tennessee shall fill out in triplicate a temperature chart on official blanks, which will be furnished upon application to this Department; one copy to be sent to the City Health Officer, one copy to the County Health Officer, and one copy to the State Live Stock Inspector.

SEC. 3. No Ophthalmic, Cutaneous, nor any other "freak test" will be recognized by this Department.

SEC. 4. Veterinarians making the tuberculin test in Tennessee shall brand all reacting animals with the letter "T" on right jaw. The brand letter shall be at least three and one-half ($3\frac{1}{2}$) inches high, and the impression (with branding iron red hot) shall be made clear and dis-

ting. Said veterinarian shall within twenty-four hours report all branded reacting animals to the County Health Officer of the County in which said animals are found. The County Health Officer shall notify the County Live Stock Inspector, who shall immediately visit the farm or premises and isolate and place in temporary quarantine all branded, reacting animals, and said animals shall be kept under official supervision until they are disposed of according to law, by appraisalment and slaughter.

Given under our hands and seal, this, June 26, 1911, Nashville, Tennessee.

T. F. PECK,
Commissioner of Agriculture.

(SEAL)

G. R. WHITE,
State Live Stock Inspector.

DEPARTMENT OF AGRICULTURE, STATE OF TENNESSEE.

OFFICIAL ORDER NO. 2.

Rules and Regulations promulgated by the Commissioner of Agriculture and the State Live Stock Inspector, under authority conferred by the Acts of Tennessee 1901, 1907 and 1909.

EFFECTIVE ON AND AFTER JULY 20, 1911.

WHEREAS, The fact has been determined by the Commissioner of Agriculture and State Live Stock Inspector, that the common practice of driving quarantine cattle from certain stock yards, over the public streets and alleys to places of slaughter, in the cities of Nashville and Jackson, is a constant menace to the cattle raising industry of Tennessee; and, whereas, such cattle from the quarantine area have been allowed to be thus handled, under authority of Section 3, pages 16 and 17 of the printed Rules and Regulations of this Department for the year 1911;

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby order:

SECTION 1. That Section 3, pages 16 and 17 of the printed Rules and Regulations of this Department, for the year 1911, be amended by striking out the words in paragraph (c) as follows: "Unless permission for such passing is first obtained from a duly authorized State Inspector." It is therefore unlawful to drive any cattle from the quarantine area over the streets and alleys in the cities of Nashville and

Jackson, for any purpose whatsoever; and all permits heretofore issued to persons, firms and corporations to remove cattle over the streets and alleys of said cities are hereby *revoked*.

SECTION 2. Railroad, steamboats, express and other transportation companies, stock yards, butchers, packing firms and other persons, firms and corporations engaged in the handling, transportation or slaughter of cattle are hereby warned against violation of Section 1 of this official order.

Given under our hands and seal this, July 6, 1911.

T. F. PECK,

Commissioner of Agriculture.

(SEAL)

G. R. WHITE,

State Live Stock Inspector.

DEPARTMENT OF AGRICULTURE, STATE OF TENNESSEE.

OFFICIAL ORDER NO 3.

Rules and Regulations promulgated by the Commissioner of Agriculture and the State Live Stock Inspector, under authority conferred by the Acts of Tennessee 1901, 1907 and 1909.

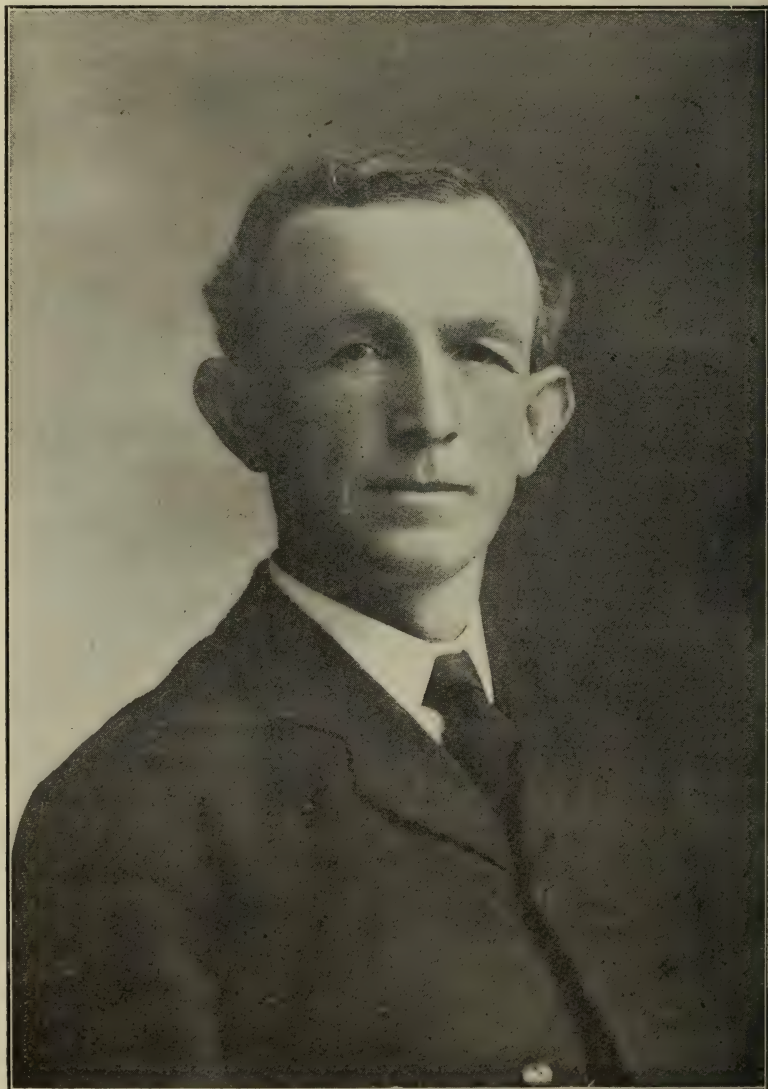
EFFECTIVE ON AND AFTER JULY 15, 1911.

WHEREAS, The fact has been determined by the Commissioner of Agriculture and State Live Stock Inspector, that cattle being handled in accordance with the law, rules and regulations of this Department, in counties in Tennessee in which the work of tick eradication is being regularly conducted, may be shipped safely under certain restrictions.

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby order:

SECTION 1. In the counties of Tennessee in which work of tick eradication is being regularly conducted, and in which all cattle are being handled in accordance with the Laws and Rules and Regulations of the Commissioner of Agriculture and the State Live Stock Inspector governing the control and extermination of contagious, infectious and communicable diseases of live stock, the following regulation will apply:

SEC. 2. Cattle that have been dipped regularly every two weeks for three months in arsenical solution under the supervision of a county, State or Federal live stock inspector, and on inspection are found free from ticks, may be furnished with a certificate signed jointly



**HON. W. W. OGILVIE, of Lewisburg,
Former Commissioner of Agriculture, and now Vice President Middle
Tennessee Farmers' Institute.**

by the State Live Stock Inspector and an inspector of the Bureau of Animal Industry, entitling the owner of the cattle so certified to drive them over the public road to the railroad dipping vat, in which they must again be dipped in arsenical solution, under the supervision of a Bureau Inspector, in a dipping vat, approved by the U. S. Secretary of Agriculture, which is located in connection with the stock pens, so that after dipping they may be handled only through non-infected pens and chutes, into cleaned and disinfected cars, after which they may be shipped into the free area, in accordance with the regulations of the U. S. Secretary of Agriculture for purposes other than immediate slaughter.

Given under our hands and seal, this July 8, 1911, Nashville, Tenn.

T. F. PECK,
Commissioner of Agriculture.

(SEAL) G. R. WHITE,
State Live Stock Inspector.

DEPARTMENT OF AGRICULTURE, STATE OF TENNESSEE.

OFFICIAL ORDER NO 4.

Rules and Regulations promulgated by the Commissioner of Agriculture and the State Live Stock Inspector, under authority conferred by the Acts of Tennessee 1901, 1907 and 1909.

EFFECTIVE ON AND AFTER AUGUST 1, 1911.

WHEREAS, The fact has been determined by the Commissioner of Agriculture and State Live Stock Inspector, and notice is hereby given that all *public* stock yards in Tennessee are infected with hog cholera and other contagious and infectious swine diseases; and,

WHEREAS, The movement of swine from any public stock yards in this State for "breeding," "stock" or "feeding purposes," or for any other purpose other than immediate slaughter, is a constant menace to the swine raising industry of Tennessee; and,

WHEREAS, The swine growing interests demand that proper steps be taken to prevent the further spread of hog cholera and other contagious and infectious swine diseases from said infected public stock yards.

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby order:

SECTION 1. That all public stock yards in the State are hereby

placed in quarantine—as regards the handling of swine—and all persons, firms and corporations are prohibited from removing swine therefrom for any purpose other than immediate slaughter.

Given under our hands and seal this, July 17, 1911, Nashville, Tenn.

T. F. PECK,
Commissioner of Agriculture.

(SEAL) G. R. WHITE,
State Live Stock Inspector.

DEPARTMENT OF AGRICULTURE, STATE OF TENNESSEE.

OFFICIAL ORDER NO. 5.

Rules and Regulations promulgated by the Commissioner of Agriculture and the State Live Stock Inspector, under authority conferred by the Acts of Tennessee 1901, 1907 and 1909.

EFFECTIVE ON AND AFTER AUGUST 10, 1911.

WHEREAS, The fact has been determined by the Commissioner of Agriculture and State Live Stock Inspector, and notice is hereby given that cattle infected with a contagious disease known as Splenic—Southern or Texas fever—were driven over the following named roads and streets in Madison County, Tennessee, on June 27 and July 1, 1911, all of which are hereby quarantined:

The Poplar Corner Road from Mr. J. D. Mason's place, two miles northwest of Jackson, Tenn., to College street, thence to the Mobile & Ohio Railroad Quarantine Stock Pens, at Jackson, Tenn. Also the Double Bridge road from Carrol Switch to the Mobile & Ohio Railroad Quarantine Stock Pens, at Jackson, Tenn.;

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby order that no cattle shall be moved or allowed to move over the above mentioned roads and streets unless permission is first obtained from the State Live Stock Inspector.

Given under our hands and seal, this August 9, 1911, Nashville, Tennessee.

T. F. PECK,
Commissioner of Agriculture.

(SEAL) G. R. WHITE,
State Live Stock Inspector.

DEPARTMENT OF AGRICULTURE, STATE OF TENNESSEE.

OFFICIAL ORDER NO. 6.

Rules and Regulations promulgated by the Commissioner of Agriculture and the State Live Stock Inspector, under authority conferred by the Acts of Tennessee, 1901, 1907 and 1909.

EFFECTIVE ON AND AFTER SEPTEMBER 5, 1911.

WHEREAS, The fact has been determined by the Commissioner of Agriculture and State Live Stock Inspector, and notice is hereby given that numerous shipments of horses, mares, geldings and colts from St. Louis, Mo., and East St. Louis or National Stock Yards, Illinois, carrying upon their bodies a dangerous parasite known as *Margaropus Annulatus*, or "Texas Fever Tick," have been received by and delivered through the Nashville Union Stock Yards; and,

WHEREAS, Such shipments of tick infested animals are a constant menace to the live stock industry of Tennessee;

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby order:

SECTION 1. That all horses, mares, geldings and colts arriving at the Nashville Union Stock Yards from St. Louis, Mo., and East St. Louis, or National Stock Yards, Illinois, shall go into quarantine pens and there remain until such time as they may be certified in writing as being free from Texas fever tick infestation or exposure thereto, or other contagious or infectious diseases.

SEC. 2. That all inspections of animals to which this order applies, and all releases from quarantine shall be made by a duly authorized State, County or Federal Live Stock Inspector.

SEC. 3. That the Nashville Union Stock Yards Company, its officers and employes are hereby ordered to hold—at the owners' expense—all animals to which this order applies until they are released by the proper authorities. They are further ordered to set aside certain prescribed pens for the handling of such animals.

Given under our hands and seal, this September 1, 1911.

T. F. PECK,
Commissioner of Agriculture.

(SEAL)

G. R. WHITE,
State Live Stock Inspector.

DEPARTMENT OF AGRICULTURE, STATE OF TENNESSEE.

OFFICIAL ORDER NO. 7.

Rules and Regulations promulgated by the Commissioner of Agriculture and State Live Stock Inspector, under authority conferred by the Acts of Tennessee, 1901, 1907 and 1909. To eradicate and prevent the further spread of "Sheep Scabies" in Tennessee.

EFFECTIVE ON AND AFTER SEPTEMBER 7, 1911.

WHEREAS, The work of "Sheep Scabies" eradication has been undertaken by the State of Tennessee in cooperation with the Federal Government, and whereas, the sheep raising industry of the State demands that prompt and heroic measures be adopted;

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby order:

SECTION 1. That no sheep intended for purposes other than immediate slaughter shall be shipped, trailed, otherwise removed or allowed to drift into the State of Tennessee, except as hereinafter provided, unless accompanied by a certificate of inspection issued by an inspector of the U. S. Bureau of Animal Industry certifying that the sheep have been dipped twice within ten days of time of entry into the State, in either a nicotine, or lime and sulphur dip, which has been approved by the U. S. Bureau of Animal Industry.

Provided, however, that sheep not accompanied by certificate as above indicated, may be shipped by rail or boat to points within Tennessee if billed to or through public stock yards where Federal Government inspection is maintained, and there unloaded and dipped under the supervision of an inspector of the U. S. Bureau of Animal Industry.

SEC. 2. When sheep intended for purposes other than immediate slaughter are brought into the State under a dipping certificate, or sheep not accompanied by certificate which are intended to be dipped at public stock yards after arrival within the State, as hereinbefore provided, the owner or shipper shall before the sheep enter the State, notify the State Live Stock Inspector of Tennessee, at Nashville, Tenn., in writing or by telegraph, indicating the number of sheep in the shipment, point of origin and destination, railroad or boat over which shipped, and whether the sheep are accompanied by such certificate.

SEC 3. All sheep shipped into the State under a dipping certificate, and all sheep transported within the State by railroad or boat



Home-Makers' Association Middle Tennessee Farmers' Institute in Session at Heritage Hotel, Nashville, Dec. 3-4-5, 1912.

when not destined to market points where Federal inspection is maintained, shall be loaded in cleaned and disinfected cars or boats.

SEC. 4. All official dippings within the State of Tennessee and all sheep dipped in other States which are intended to be moved into Tennessee for purposes other than immediate slaughter, shall be made in either "tobacco" or nicotine dip, or the lime and sulphur dip, as prescribed and permitted by the U. S. Bureau of Animal Industry. No recognition whatever will be given to dipping in dips other than those mentioned above, and no "home-made" dips will be recognized by this Department.

SEC. 5. Whenever a shipment of sheep originating in or in transit through the State shall be found diseased with scabies or other communicable disease, the cars, boats or other vehicles, yards, sheds, pens, chutes, etc., that have contained such diseased sheep shall not be used to transport or yard other sheep until they have been cleaned and disinfected in the manner prescribed in the Regulations of the U. S. Department of Agriculture pertaining to scabies in sheep.

SEC. 6. Sheep that are diseased with scabies or have been exposed to the disease may be quarantined by either the Commissioner of Agriculture, the State Live Stock Inspector, or any State or County Live Stock Inspector on any farm, within any shed, yard, stall, crate, box or other permanent or temporary receptacle, and shall not move or be allowed to move except as hereinafter provided.

SEC. 7. No sheep affected with scabies within the State of Tennessee shall be offered for transportation to any railroad company, steamboat, ferry or other common carrier for transportation to points within or outside the State of Tennessee until they have been inspected by a State or County Live Stock Inspector, found free from "scabies" and exposure thereto, and are accompanied by a regular certificate of inspection. One copy of the certificate shall accompany shipments to their destination and be attached to waybills, and another copy shall be mailed promptly to the State Live Stock Inspector.

SEC. 8. Sheep affected with scabies that have been dipped twice, ten days apart, in one of the dips permitted in Section 4 of these Regulations, and under the supervision of a Federal, State or County Live Stock Inspector, may be shipped or driven to any point within Tennessee for any purpose within ten days on permit issued by an Inspector of the State or County.

SEC. 9. All sheep in a certain flock or shipment in which the disease is present shall be classed as diseased sheep, and none of them shall be moved or allowed to move except as provided for in foregoing regulations.

SEC. 10. All cars, stock yards, chutes, pens, alleys, barns, cellars sheds, racks, crates, boxes, or other receptacles having contained sheep affected with scabies shall be cleaned and disinfected as soon thereafter as possible in the following manner:

Remove all litter and manure and then saturate the interior surfaces with a solution containing 5 per cent of pure carbolic acid.

SEC. 11. The sheep must be kept in the dip between two and three minutes and their heads submerged at least once, though but an instant at a time, and assistance must be rendered immediately they appear to be strangling. The dip must be maintained at a temperature between 100 F. and 110 F. while the sheep are in it. It must be changed as soon as it becomes filthy, regardless of number of sheep dipped in it, and in no case shall it be used more than one week old. In emptying the dipping vat the entire contents must be removed, including all sediment and droppings or other foreign matter

SEC. 12. Sheep moving under health certificates for breeding or feeding purposes shall be handled in free or uninfected pens in stock yards, and infected sheep, or those moving unaccompanied by health certificate, shall be handled in quarantined or infected pens. All public stock yards which do not maintain quarantine pens separate and distinct from the free or uninfected pens are hereby declared and placed in permanent quarantine in so far as handling sheep for breeding or feeding purposes are concerned.

Given under our hands and seal this September 1, 1911.

T. F. PECK,
Commissioner of Agriculture,

G. R. WHITE,
State Live Stock Inspector.

DEPARTMENT OF AGRICULTURE, STATE OF TENNESSEE.

OFFICIAL ORDER NO. 8.

Rules and Regulations promulgated by the Commissioner of Agriculture and State Live Stock Inspector, under authority conferred by the Acts of Tennessee, 1901, 1907 and 1909, to eradicate and prevent the further spread of "Sheep Scabies" in Tennessee, by specifying dips which are approved by this Department.

EFFECTIVE ON AND AFTER SEPTEMBER 16, 1911.

WHEREAS, The fact has been determined by the Commissioner of

Agriculture and the State Live Stock Inspector, and notice is hereby given that "Scabby Sheep" are being promiscuously dipped in different parts of the State in unreliable home-made and proprietary preparations; and,

WHEREAS, Such inefficient dipping is not calculated to control and eradicate sheep scab;

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby order:

SECTION 1. That where sheep scab exists in a flock, or sheep have been exposed thereto, the following dips are hereby recommended and approved by this Department:

TOBACCO OR NICOTINE DIPS.

Derby Nicotine Solution, Atlantic Refining Co., Cleveland, Ohio.
Skabcure Nicotine Solution, Nicotine Manufacturing Co., St. Louis, Mo.

Black Leaf Tobacco Extract, Kentucky Tobacco Product Co., Louisville, Ky.

Cooper's Nicotine Dip, Wm. Cooper & Nephews, Chicago, Ill.

Black Leaf 40, Kentucky Tobacco Product Co., Louisville, Ky.

LIME AND SULPHUR DIPS.

Grasselli Lime and Sulphur Solution, Grasselli Chemical Co., Cleveland, Ohio.

Sherwin-Williams Lime and Sulphur Solution, Sherwin-Williams Co., Cleveland, Ohio.

SEC. 2. All other nicotine or tobacco dips and lime and sulphur dips that have been or may hereafter be approved by the U. S. Department of Agriculture will be approved by the State of Tennessee. No home-made dips will be recognized.

Given under our hands and seals, at State Capitol, this September 16, 1911.

T. F. PECK,
Commissioner of Agriculture,

G. R. WHITE,
State Live Stock Inspector.

(SEAL)

DEPARTMENT OF AGRICULTURE, STATE OF TENNESSEE.

OFFICIAL ORDER NO. 9.

Rules and Regulations promulgated by the Commissioner of Agriculture and the State Live Stock Inspector, under authority conferred by the Acts of Tennessee, 1901, 1907 and 1909.

EFFECTIVE ON AND AFTER OCTOBER 1, 1911.

WHEREAS, The fact has been determined by the Commissioner of Agriculture and State Live Stock Inspector, and notice is hereby given that the St. Louis National Stock Yards Company have made certain and necessary changes in their method of handling horses, geldings, mares, colts and mules, so as to prevent Texas fever tick infestation, or exposure thereto, while in their yards; and

WHEREAS, We are assured by the St. Louis National Stock Yards Company, through the U. S. Bureau of Animal Industry, that the proper and necessary inspections will be made to prevent the shipment of tick-infested animals into the State of Tennessee, and that all future shipments will be made in cleansed and disinfected cars;

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby order:

SECTION I. That Official Order No. 6 is hereby revoked.

Given under our hands and seal, at State Capitol, this September 30, 1911.

T. F. PECK,
Commissioner of Agriculture,

(SEAL) G. R. WHITE,
State Live Stock Inspector.

DEPARTMENT OF AGRICULTURE, STATE OF TENNESSEE.

OFFICIAL ORDER NO. 10.

Rules and Regulations promulgated by the Commissioner of Agriculture and the State Live Stock Inspector, under authority conferred by the Acts of Tennessee, 1901, 1907 and 1909, to eradicate and prevent the further spread of Splenetic, Southern or Texas Fever.

EFFECTIVE ON AND AFTER OCTOBER 13, 1911.

WHEREAS, The fact has been determined by the Commissioner of Agriculture and State Live Stock Inspector, and notice is hereby given

that a contagious and infectious disease, known as Splenetic, Southern or Texas Fever, or the ticks causing such disease, exists among cattle within the following described area in Davidson County, Tennessee:

Beginning at the junction of the main line of the N., C. & St. L. Ry. and the penitentiary spur track, thence north along spur track to Charlotte Pike; thence west along south boundary of Charlotte Pike to Richland Creek; thence south along Richland Creek to main line of the N., C. & St. L. Ry.; thence east along said railway to the beginning of penitentiary spur track. Beginning at penitentiary spur track and Charlotte Pike, thence north along spur track to penitentiary gate; then along stone wall from penitentiary gate to Richland Creek; thence south along Richland Creek to Charlotte Pike; thence east along north boundary of pike to the beginning at Charlotte Pike and penitentiary spur track.

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby quarantine the area enclosed within the above described lines, and it is hereby ordered that no cattle shall be transported, driven or allowed to drift therefrom to any portion of Tennessee not herein quarantined, except upon written permission from the State Live Stock Inspector.

Given under our hands and seal, at State Capitol, this October 13, 1911.

T. F. PECK,
Commissioner of Agriculture,

(SEAL) G. R. WHITE,
State Live Stock Inspector.

DEPARTMENT OF AGRICULTURE, STATE OF TENNESSEE.

OFFICIAL ORDER NO. II.

Rules and Regulations promulgated by the Commissioner of Agriculture and the State Live Stock Inspector, under authority conferred by the Acts of Tennessee, 1901, 1907 and 1909, to eradicate and prevent the further spread of Splenetic, Southern or Texas Fever.

EFFECTIVE ON AND AFTER NOVEMBER 20, 1911.

WHEREAS, The fact has been determined by the Commissioner of Agriculture and the State Live Stock Inspector, and notice is hereby given that a contagious and infectious disease known as Splenetic, Southern or Texas Fever, exists among cattle in the following de-

scribed area in Carroll County, Tennessee, all of which is hereby quarantined for Splenetic, Southern or Texas Fever:

That part of Carroll County south of Mackey's Bridge and Levee Road and east of the Big Sandy River to the Henderson County line;

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby quarantine that portion of Carroll County as described above, and

It is hereby ordered that cattle shall not be transported, driven, or allowed to drift therefrom to any portion of Tennessee not herein quarantined, nor to any quarantined portion of Tennessee where the work of tick eradication is being conducted, except for immediate slaughter, and that said cattle shall have been inspected, found free of Texas Fever infection and from exposure thereto, and written permission issued by a duly authorized State Inspector of Live Stock for the shipment or movement of cattle from said area.

Given under our hands and seal at State Capitol, this November 20, 1911.

T. F. PECK,
Commissioner of Agriculture,

(SEAL) G. R. WHITE,
State Live Stock Inspector.

DEPARTMENT OF AGRICULTURE, STATE OF TENNESSEE.

OFFICIAL ORDER NO. 12.

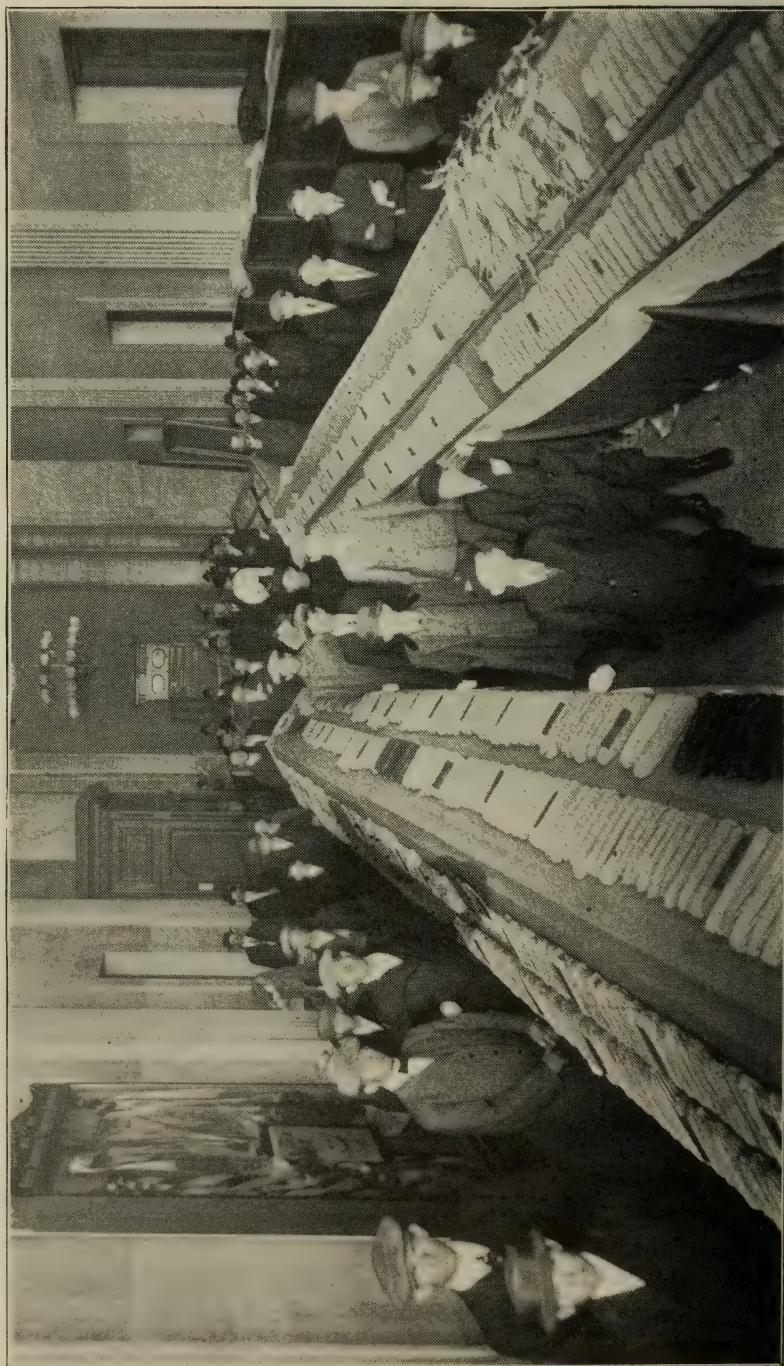
Rules and Regulations promulgated by the Commissioner of Agriculture and the State Live Stock Inspector, under authority conferred by the Acts of Tennessee, 1901, 1907 and 1909.

EFFECTIVE ON AND AFTER JANUARY 1, 1912.

WHEREAS, On August 1, 1911, Official Order No. 5 was promulgated, placing in quarantine the Poplar Corner Road from Mr. J. D. Mason's place, two miles northwest of Jackson, Tenn., to College Street, thence to the Mobile & Ohio Railroad Quarantine Stock Pens, at Jackson, Tenn.; also the Double Bridge Road from Carroll Switch to the Mobile & Ohio Railroad Quarantine Stock Pens, at Jackson, Tenn.

WHEREAS, the fact has been determined and notice is hereby given that we consider the danger of infection entirely eliminated;

Now, Therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby order:



Corn Club Boys' and Exhibit at Middle Tennessee Farmers' Institute, Nashville, December 5-6-7, 1911.

SECTION 1. That Official Order No. 5 is hereby revoked, and the above described roads are released from quarantine.

Given under our hands and seal, at State Capitol, Nashville, Tenn., this December 18, 1911.

T. F. PECK,
Commissioner of Agriculture,

(SEAL) G. R. WHITE,
State Live Stock Inspector.

DEPARTMENT OF AGRICULTURE, STATE OF TENNESSEE.

OFFICIAL ORDER NO. 13.

Rules and Regulations promulgated by the Commissioner of Agriculture and State Live Stock Inspector, under authority conferred by the Acts of Tennessee, 1901, 1907 and 1909.

EFFECTIVE ON AND AFTER JANUARY 15, 1912.

SECTION 1. The fact has been determined by the Commissioner of Agriculture and the State Live Stock Inspector, and notice is hereby given, that a contagious and infectious disease, known as Splenetic, Southern or Texas fever, exists among cattle in the following named counties of Tennessee, all of which are quarantined for Splenetic, Southern or Texas fever: Chester, Decatur, Hardin, Henderson and McNairy.

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby quarantine the counties as described in Section 1, and it is hereby ordered that no cattle shall be transported, driven or allowed to drift therefrom, for any purpose, to any portion of Tennessee not herein quarantined.

It is further ordered that no person owning or having in charge any cattle shall permit them to run at large or stray on any public road, common or range, in any quarantine county described in Section 1.

SEC. 2. Notice is hereby given that a contagious and infectious disease, known as Splenetic, Southern or Texas fever, exists among cattle in the following named counties of Tennessee, all of which are quarantined for Splenetic, Southern or Texas fever: Hamilton, Hardeman and Wayne.

That part of Marion County south and east of the Tennessee River; that part of Polk County south of the Hiwassee River; that part of

Lawrence County south of the line beginning where the Pulaski and Lawrenceburg public road intersects the Giles County line; thence in a westerly direction following said road to Lawrenceburg; thence following the Waterloo road west two miles; thence following the Lawrenceburg and Waynesboro public road northwesterly to its intersection with the Wayne County line.

That part of Benton County west of Camden, Coxburg and Sugar Tree public road, and south of the Nashville, Chattanooga & St. Louis Railway from its intersection with the said public road at Camden to the Carroll County line. And that part of Carroll County south of Mackey's Bridge and Levee Road, and east of the Big Sandy River to the Henderson County line.

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby quarantine the counties and parts of counties as described in Section 2, and it is hereby ordered that no cattle shall be transported, driven or allowed to drift therefrom, to any portion of Tennessee not herein quarantined, unless the owner or person in charge shall first obtain written permission for such movement or privilege from a duly authorized State Live Stock Inspector, and only then for immediate slaughter, providing cattle on inspection are found free from ticks.

It is further ordered that no person owning or having in charge any cattle shall permit them to run at large or stray or any public road, common or range in any quarantine county described in Section 2, unless the owner or person in charge shall regularly disinfect cattle in accordance with instructions given by the State Live Stock Inspector, and shall first obtain written permission for such movement or privilege from a duly authorized State Live Stock Inspector.

SEC. 3. In the counties of Tennessee in which work of tick eradication is being regularly conducted, and in which all cattle are being handled in accordance with the Laws and Rules and Regulations of the Commissioner of Agriculture and the State Live Stock Inspector governing the control and extermination of contagious, infectious and communicable diseases of live stock, the following regulation will apply:

SEC. 4. Cattle that have been dipped regularly every two weeks for three months in arsenical solution under the supervision of a county, State or Federal Live Stock Inspector, and on inspection are found free from ticks, may be furnished with a certificate signed jointly by the State Live Stock Inspector and an inspector of the Bureau of Animal Industry, entitling the owner of the cattle so certified to drive them over the public road to the railroad dipping vat, in which they

must again be dipped in arsenical solution, under the supervision of a Bureau Inspector, in a dipping vat approved by the U. S. Secretary of Agriculture, which is located in connection with the stock pens, so that after dipping they may be handled only through non-infected pens and chutes, into clean and disinfected cars, after which they may be shipped into the free area, in accordance with the regulations of the U. S. Secretary of Agriculture, for purposes other than immediate slaughter.

SEC. 5. No person,, company or corporation within the area quarantined, as described in Sections 1 and 2, shall receive for transportation any cattle unless permission is first obtained from the State Live Stock Inspector. It is hereby ordered that transportation companies securely lock the gates of all stock yards, stock pens and loading chutes, and not permit cattle to be placed in such yards, pens or chutes in any manner, unless permission is first obtained from the State Live Stock Inspector.

Given under our hands and seal, this January 5, 1912, Nashville, Tenn.

T. F. PECK,
Commissioner of Agriculture,

(SEAL) G. R. WHITE,
State Live Stock Inspector.

DEPARTMENT OF AGRICULTURE, STATE OF TENNESSEE.

OFFICIAL ORDER NO. 15.

Rules and Regulations promulgated by the Commissioner of Agriculture and the State Live Stock Inspector, under authority conferred by the Acts of Tennessee, 1901, 1907, and 1909, to eradicate and prevent the further spread of Texas Fever.

EFFECTIVE ON AND AFTER JULY 12, 1912.

WHEREAS, The fact has been determined by the Commissioner of Agriculture and State Live Stock Inspector, and notice is hereby given that the authorities of Chester County have signified their willingness to cooperate with the State and Federal Government in the work of tick eradication in that county;

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby order:

SECTION 1. That the printed Rules and Regulations governing

Live Stock Sanitary Control Work in Tennessee, effective on and after April 5, 1912, be, and are hereby, amended as follows:

The word "Chester" in the first paragraph, line seven, section 1, page 10, be stricken out. The word "Chester" shall be inserted after the word "Wayne" in first paragraph, line 5, section 2, page 10. The words, "shall move or permit them to be moved or," shall be inserted after the word "cattle," in paragraph 3, line 30, of section 2, page 10, of Regulations.

Given under our hands and seal, at State Capitol, Nashville, Tenn., this July 10, 1912.

T. F. PECK,
Commissioner of Agriculture,

(SEAL) G. R. WHITE,
State Live Stock Inspector.

Official permits to allow cattle to run out on public roads, commons and ranges will be issued as soon as the cattle are dipped under official supervision. These permits will be good for fourteen days from date of issuance, at which time they will be renewed when the cattle are redipped.

SALE OF COMMERCIAL FERTILIZERS.

*Report of Jesse Tomlinson, Assistant Commissioner of Agriculture for
Middle Tennessee.*

Hon. T. F. Peck, Commissioner of Agriculture, Nashville, Tenn.

DEAR SIR—I herewith submit statement of the sale of commercial fertilizers in Tennessee for the past two years.

For the year 1911, 68,971 tons were sold to the farmers and truck growers in the State, consisting of 281 different brands.

In 1912, 73,743 tons were sold, consisting of 300 brands, all of which were sampled and analyzed according to law.

The increase of tonnage for the year 1912, over that of 1911, is 4,772 tons.

Of the 73,743 tons used in 1912, 28,022 went to East Tennessee, 25,810 to Middle Tennessee, and 19,911 went to West Tennessee.

The records show that about two-thirds of the shipment to the East and Middle Divisions were used for the spring crop; a very insignificant amount was used in West Tennessee for the fall crop. Forty-nine factories registered 1,298 brands in this office for the year 1912. Forty-six factories registered for 1911.

The combined shipments for the past two years are 142,714 tons, as against 112,754 tons for the preceding two years, an increase for the two years of 29,960 tons.

The records show that the use of commercial fertilizer is increasing rapidly, which indicates that Tennessee farmers are beginning to realize that their fields are being depleted of plant food, and are making an effort to supply this deficiency with commercial fertilizers, and yet it is doubtful whether the average farmer has a very clear idea of what element of plant food his crop needs or his soil is lacking. Consequently, he is left to the mercy of the agent who sells fertilizer, and who frequently knows as little about it as the farmer himself. This lack of information might be corrected in a great measure if the farmers in each community who use commercial fertilizer would meet and discuss the subject, for almost in every neighborhood the soils and crops are about the same.

In using commercial fertilizers the mechanical condition of the soil should be the best, for unless the soil is thoroughly pulverized to a sufficient depth to hold water enough to dissolve the elements in the fertilizer, the roots of the plants cannot take them up, and the elements lie in the soil dormant, and consequently do the plant no good.

As the mixing of the elements of which the fertilizer is composed does not increase their crop producing power (but will have the same effect if applied separately) would it not be advisable for the farmer to buy the elements and do his own mixing? This is not a very complicated operation. It simply consists of spreading the bulkiest element evenly on a tight floor, then the next bulky, and so on. Begin, then, on one side, and shovel back, and repeat the operation until the elements are thoroughly mixed. By this method the farmer could proportion the elements so as to suit the needs of the soil and crop. However, he should be careful to see that the elements are finely pulverized.

Respectfully submitted,

JESSE TOMLINSON,
Assistant Commissioner of Agriculture.



A. L. GARRISON,
Chief Feed and Seed Inspector.

FEED AND SEED INSPECTION.

Report of A. L. Garrison, Chief Feed and Seed Inspector.

Hon. T. F. Peck, Commissioner of Agriculture, of Tennessee.

SIR—It is with pleasure I submit herewith for your consideration a report of the Feed and Seed Department for the period beginning June 1, 1911, and ending December 19, 1912.

The work of feed inspection and seed inspection is somewhat similar, and in order not to confuse, I shall report them jointly as to receipts and expenditures.

Prior to June 1, 1911, the two inspections were kept separate, the work being done by different officials. Upon your induction into the office of Commissioner of Agriculture, you decided that it would be wise to curtail expenses in the various departments under your supervision, by combining the work, and leaving off those whom you did not deem absolutely necessary. As a consequence of this reorganization, the feed and seed work was made the same, and the working force cut from eleven to four. As to the wisdom of your policy, I am content to let the following report speak for itself.

As you are aware, under the present plan we have one inspector for West Tennessee, one inspector for Middle Tennessee, and one inspector for East Tennessee, whose duties, as outlined, are to keep in touch with the various millers and manufacturers, also feed dealers, in their respective territories, and see that no infringement of the law is tolerated.

In addition to the above field inspectors, it was considered proper to have one State or chief inspector, whose duties are to have a general oversight over the work, compile bulletins, promulgate official orders, rules and regulations whenever the occasion demands, and at all times to keep in close touch with the field inspectors, giving them the benefit of any and all information that would tend to aid them in a thorough performance of their duties.

FEED INSPECTION.

There have been, and are now, two hundred and seventy-five millers and manufacturers in and out of this State, placing their products on the Tennessee market. All told, there are five hundred and ninety-three different brands or trade names of feeds on the general market. Every one of these have been sampled, and those which were in the least suspicious have been analyzed and tested.

In Tennessee Agriculture No. 2, we gave the result of the chemical analysis of 175 samples, and in February, 1913, will be given 175 more.

All these reports, with a very few exceptions, have been satisfactory, and I assure you that everything has been done without fear, favor, or partiality.

RESPECT FOR LAWS.

Without any intended reflection on our predecessors, but in justice to our work, I must state that the conditions existing when we took charge were far from the ideal. In brief, there was no respect for the feed and seed laws by either the producer or the consumer. The producer labored under the impression that the prime objects were to provide funds to pay the salaries of public officials holding political jobs. The consumer knew absolutely nothing about the provisions of the law, thereby giving no cooperation in their enforcement. It therefore was evident that there should and must be a mutual understanding between all parties concerned.

It was under these conditions that we took upon ourselves the task of convincing the producer that the law gave him protection against the unscrupulous manufacturer. All that was needed was to familiarize the consumer with the general intent and purposes of the law, and he was ready and willing to enter heartily into anything that was for his mutual protection and benefit.

As to the success of this effort, I would be willing to leave the verdict with the above named parties concerned. Ninety-nine per cent of the millers and manufacturers know that the laws are just and wise, and the consumer has been brought to realize that he has all to gain and nothing to lose.

GIVING LAWS PUBLICITY.

Our opportunity for giving the laws publicity was brought about by the tours of the agricultural trains in 1911 and 1912, when the attention of not less than two hundred thousand people of the State was called to the wholesome provisions of these two statutes. Besides this, we have taken advantage of most all the county and division institutes for the same purpose. It is not the province of this department to tell the consumer which feeds he shall purchase, and which shall be avoided. It does, however, furnish all information necessary to enable him to learn the composition of feeds, including the ingredients used in their manufacture, and then very properly leaves the question as to which feed he shall purchase to his best judgment.

REVISED LIST OF DEFINITIONS.

A recently organized association which is doing a great deal along

this line is known as the Association of Feed Control Officials of the United States. This organization is composed of all the feed control officials of the various states. This organization works in harmony, when possible, with the feed manufacturers' association. The last meeting was held in the city of Washington, November 18 and 19, 1912. The most important matters considered at this meeting were, a uniform law for all the states, which is now assured; and a revised list of definitions, which I think proper to give in this report, as it is the first opportunity since their adoption:

Alfalfa meal is the entire alfalfa hay ground, and does not contain an admixture of ground alfalfa or other foreign materials.

Blood meal is ground dried blood.

Brewers' dried grains are the properly dried residue from cereals obtained in the manufacture of beer.

Buckwheat shorts or buckwheat middlings are that portion of the buckwheat grain immediately inside of the hull after separation from the flour.

Choice cottonseed meal must be finely ground, not necessarily bolted, perfectly sound and sweet in odor, yellow, free from excess of lint, and must contain at least 41 per cent of protein.

Chop is a ground or chop feed composed of one or more different cereals or by-products thereof. If it bears a name descriptive of the kind of cereals it must be made exclusively of the entire grains of those cereals.

Clipped oat refuse (term oat clippings not recognized) is the resultant by-product obtained in the manufacture of clipped oats. It may contain light, chaffy material, broken from the ends of the hulls, empty hulls, light, immature oats and dust. It must not contain an excessive amount of oat hulls.

Corn bran is the outer coating of the corn kernel.

Corn feed meal is the sifting obtained in the manufacture of cracked corn and table meal made from the whole grain.

Cornstarch by-product with corn bran is that portion of commercial shelled corn that remains after the separation of the larger part of the starch, and the germ by the processes employed in the manufacture of cornstarch and glucose. It may or may not contain corn solubles.

Cornstarch by-product without corn bran is that part of commercial shelled corn that remains after the separation of the larger part of the starch, the germ and the bran by processes employed in the manufacture of cornstarch and glucose. It may or may not contain corn solubles.

Cottonseed feed is a mixture of cottonseed meal and cottonseed hulls, containing less than 36 per cent of protein.

Cottonseed meal is a product of the cottonseed only, composed principally of the kernel with such portion of the hull as is necessary in the manufacture of oil; provided that nothing shall be recognized as cottonseed meal that does not conform to the foregoing definition and that does not contain at least 36 per cent of protein.

Cracklings are the residue after partially extracting the fats and oils from the animal tissue. If they bear a name descriptive of their kind, composition or origin, they must correspond thereto.

Digester tankage is the residue from animal tissue, exclusive of hoof and horn specially prepared for feeding purposes by tanking under live steam, drying under high heat, and suitable grinding. If it contains any considerable amount of bone it must be designated *digester meat and bone tankage*.

Distillers' dried grains are the dried residue from cereals obtained in the manufacture of alcohol and distilled liquors. The product shall bear the designation indicating the cereal predominating.

Flax plant by-product is that portion of the flax plant remaining after the separation of the seed, the baste fiber and a portion of the shives, and consists of flax shives, flax pods, broken and immature flax seeds and the corticle tissue of the stem:

Good cottonseed meal must be finely ground, not necessarily bolted, of sweet odor, reasonably bright in color and must contain at least 36 per cent of protein.

Grits are the hard, flinty portions of Indian corn without hulls and germ.

Hominy meal, hominy feed, or hominy chop is a mixture of the bran coating the germ and a part of the starchy portion of the corn kernel, obtained in the manufacture of hominy grits for human consumption.

Malt sprouts are the sprouts of the barley grain. If the sprouts are derived from any other malted cereal the source must be designated.

Meal is the clean, sound, ground product of the entire grain, cereal or seed which it purports to represent; provided that the following meals, qualified by their descriptive names, are to be known as, viz: *corn germ meal* is a product in the manufacture of starch, glucose and other corn products, and is the germ layer from which a part of the corn oil has been extracted. *Linseed meal* is the ground residue after extraction of part of the oil from ground flax seed.

Meat scrap and meat meal are the ground residues from animal

tissue exclusive of hoof and bone. If they contain any considerable amount of bone they must be designated *meat* and *bone scrap*, or *meat* and *bone meal*. If they bear a name descriptive of their kind, composition or origin they must correspond thereto.

Oat groats are the kernels of the oat berry with the hulls removed.

Oat hulls are the outer chaffy coverings of the oat grain.

Oat middlings are the floury portion of the oat groat obtained in the milling of rolled oats.

Oat shorts are the covering of the oat grain lying immediately inside the hull, being a fuzzy material carrying with it considerable portions of the fine floury part of the groat obtained in the milling of rolled oats.

Prime cottonseed meal must be finely ground, not necessarily bolted, of sweet odor, reasonably bright in color, yellow, not brown or reddish, free from excess of lint, and must contain at least 38.6 protein.

Red dog is a low grade wheat flour containing the finer particles of bran.

Rice bran is the cuticle beneath the hull.

Rice hulls are the outer chaffy coverings of the rice grain.

Rice polish is the finely powdered material obtained in polishing the kernel.

Screenings are the smaller, imperfect grains, weed seeds and other foreign material having feeding value, separated in cleaning the grain.

Shipstuff or *wheat mixed feed* is a mixture of the products other than the flour obtained from the milling of the wheat berry.

Shorts or *standard middlings* are the fine particles of the outer and inner bran separated from bran and white middlings.

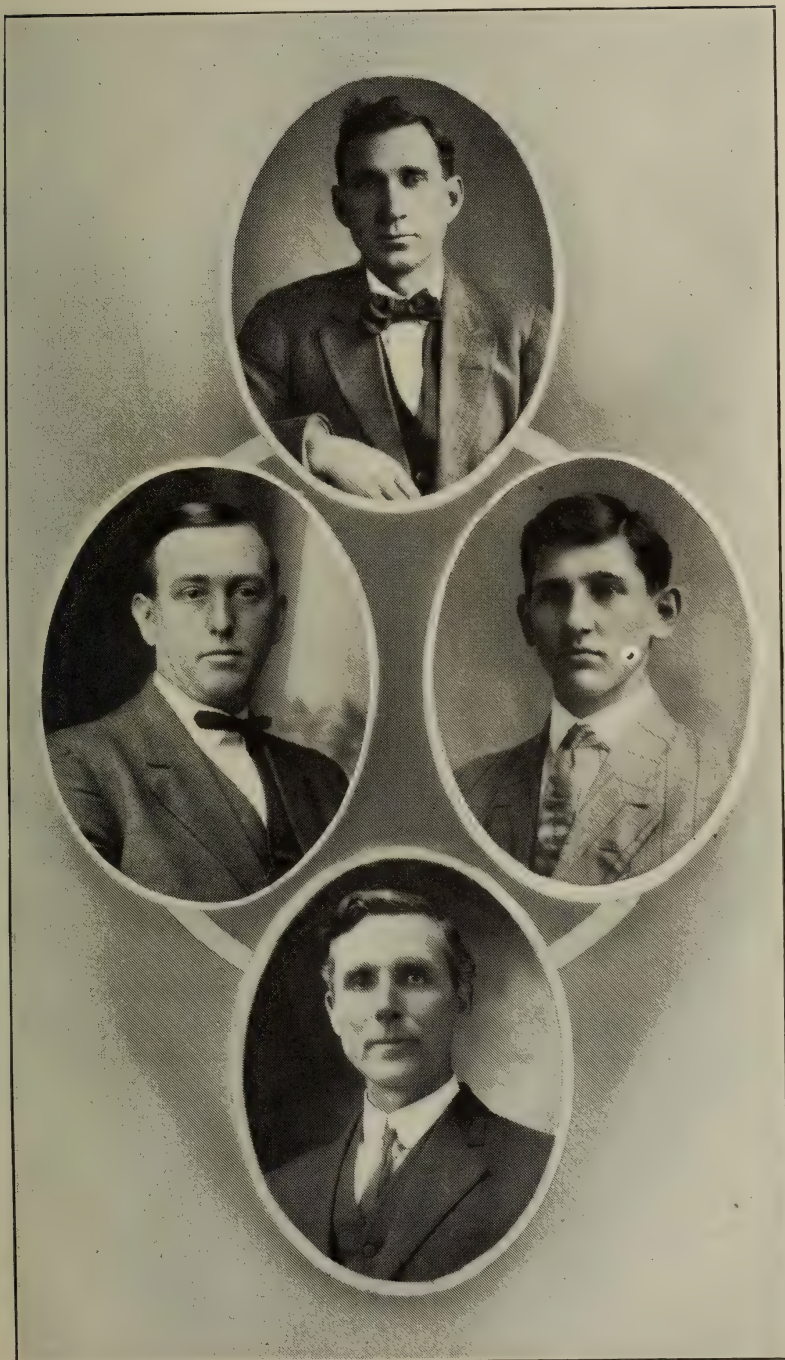
Wheat bran is the coarse outer coatings of the wheat berry.

Wheat white middlings or *white middlings* are that part of the offal of wheat intermediate between shorts or standard middlings and red dog.

SEED LAW.

Our campaign on the seed law has been carried on with about the same methods as that of the feed law, emphasizing the point of weed eradication.

The average reader may not know that many thousands of dollars have been expended and are today being expended by the Federal Government to investigate the enormous amount of weeds throughout the country, also their origin. The loss to farmers in the United States alone due to weed seeds is over one hundred million dollars annually. When we stop to consider the loss we naturally begin to think of some



NOBLE C. WHITE, Feed Inspector for Middle Tennessee.
J. W. WYNN, Feed Inspector for East Tennessee.
H. N. HARDEMAN, Stenographerr
A. M. STOUT, Feed Inspector for West Tennessee.

remedy. We first are brought to realize that the weed could, by proper cooperation, and cultivation, be exterminated, or at least greatly reduced. To be plain, the farmer today who raises a crop of wheat, corn, oats or barley is paid according to the way the crop is graded when purchased from him. If his crop contains a large per cent of bind weed, cockle, pig weed, thistle, rag weed, fox tail, or in fact any kind of weed seeds he is docked so much for the estimated per cent of weed seed, and the crop is consequently lowered in grade. In other words, the farmer loses money on account of the weed seed content in his grain, and in the cutting of the crop it is quite likely that many of these weed seeds are scattered over the stubble, and if fall plowing is done they are again returned to the ground for another crop. Now you will note that the farmer has lost money in the dockage. What becomes of the dockage? The farmer's grain goes to the elevator. The elevator cleans it and makes it a higher grade of grain by screening out the dockage. Again, what becomes of the screenings? Many car loads are sold to manufacturers of so-called balanced rations of poultry feed and horse and mule feed. Under the term of miscellaneous recleaned field seeds weed seeds are transmitted to the consumer in the guise of poultry feed at an average price of \$2 per hundred weight for a scratch feed, and \$2.50 per hundred weight for chick feed. But one fact is indisputable—that no consumer can afford to pay a freight rate on bind weed, pig weed, or any such injurious weed seed for the privilege of feeding chickens. A wheat price for weed seed does not mean economy for the consumer of poultry feeds; besides these weed seeds are light and are liable to be blown over arable land and result in a fine crop of weeds for the consumer, for which he has the privilege of paying grain prices.

The value of intelligent seed selection. From the result of eighty-two samples of field seed tests made recently circumstances seem to call for a warning on the matter of the quality of seed offered for sale in the State. It is the progressive and successful farmers who are coming more and more to realize the importance of the quality of seed used for planting, as well as better varieties and improved methods and machinery. There are many uncontrollable factors of loss in agriculture, but a great and preventable one is the planting of poor seed. There is sown annually a great amount of poor seed, which often contains, or is adulterated with, the seeds of vile weeds, which frequently cause great injury and loss to the farm.

Tennessee seed law. Our seed law prohibits any person from selling, exposing or offering for sale, for the purpose of seeding, any

agricultural seed unless the same be free from the seeds of the following weeds: Wild mustard, quick grass, Canada thistle, wild oats, clover and alfalfa dodder, field dodder, corn cockle, sour dock, wild onions and ox-eye daisy. The above are positively forbidden. The following weed seed are allowed in limited quantities, but are considered as impurities: White cockle, night-flowering catch fly, curled dock, smooth dock, sheep sorrel, yellow tree foil, burr clover, sweet clover, black mustard, buck horn, plantain, bind weed, smooth crab grass, common chick weed. When any of the above impurities are present in quantities exceeding a total of two per cent of the weight of said agricultural seed, then it is the duty of the seedman to place a statement on each bag or parcel stating the exact fact. While the seed men of the State are largely high-class, progressive business men, there are many violations of the above exceedingly important provisions.

THE SEEDMAN NOT THE ONLY SINNER IN THE BUSINESS.

The undesirable condition of the seed trade rests quite as much with the mass of farmers who demand low-priced seed, as with the dealers who meet the demand. When the farmers realize that some other consideration aside from merely the price must be the guide in purchasing, and that low-priced seed is not the cheapest, but that the very best seed that can be bought is the cheapest, and when they will have nothing but the best grade, the dealers will be compelled to meet the demand. A large part of the dealer's profit is derived from the sale of screenings, and low-grade seed. For instance, when good seed is selling for 15 cents per pound, and the farmer demands a cheaper grade, the dealer will mix screenings and low-grade seed, worth 3 or 5 cents per pound, with the better grade seed to make the various cheaper grades. The mixing, of course, is done proportionately to the price and to the profit of the dealer, and to the loss of the farmer. An examination of samples of seed offered for sale by farmers is also convincing that he is not too particular about what he sells. Farmers of certain sections produce a small amount of field seed, which they sell to their neighbors and to local dealers. This may be good seed, but it very often is not, as the farmers are not careful to keep the fields free from weeds, and do not have the machinery necessary to clean the seed properly. It therefore often contains a high per cent of noxious weed seed and dirt.

The following is a comparative statement of the receipts and disbursements:

RECEIPTS FROM THE SALE OF FEED AND SEED STAMPS.

1911.

June—

	Receipts.	Total.
Feed	\$1,048 10	
Seed	34 00—	\$1,082 10

	Expense.	Total.
Feed	\$ 239 30	
Seed	162 45—	\$ 401 75

July—

Feed	1,443 07	
Seed	69 00—	1,512 07

Feed	340 80	
Seed	92 91—	433 71

August—

Feed	1,220 55	
Seed	268 11—	1,488 66

Feed	558 50	
Seed	65 00—	623 50

September—

Feed	1,518 05	
Seed	394 23—	1,912 28

Feed	767 46	
Seed	134 62—	902 08

October—

Feed	1,947 15	
Seed	335 32—	2,282 47

Feed	297 18	
Seed	211 36—	508 54

November—

Feed	1,986 76	
Seed	27 00—	2,013 76

Feed	1,105 39	
Seed—	1,105 39

December—

Feed	1,505 35—	1,505 35
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Feed	1,560 30—	1,560 30
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1912.

January—

Feed	2,093 93	
Seed	582 00—	2,675 93

Feed	118 48	
Seed	103 28—	221 76

February—

Feed	2,421 89	
Seed	968 40—	3,390 29

Feed	297 85	
Seed	243 13—	540 98

March—

Feed	1,749 46	
Seed	485 03—	2,234 49

Feed	427 19	
Seed	404 92—	832 11

April—

Feed	2,099 83	
Seed	72 25—	2,172 08

Feed	411 93	
Seed	330 94—	742 87

May—

Feed	1,511 91	
Seed	137 05—	1,648 96

Feed	904 09	
Seed	171 53—	1,075 62

June—

Feed	1,132 57	
Seed	39 50—	1,172 07

Feed	238 34	
Seed	131 55—	369 89

July—

Feed	1,092 89	
Seed	64 50—	1,157 39

Feed	462 11	
Seed	145 20—	607 31

August—

Feed	1,452 38	
Seed	279 25—	1,731 63

Feed	794 56	
Seed	120 93—	915 49

September—

Feed	1,512 21	
Seed	772 25—	2,284 46

Feed	454 40	
Seed .....	.....—	454 40

October—

Feed	2,491 13	
Seed	545 00—	3,036 13

Feed	528 96	
Seed	21 00—	549 96

November—

Feed	1,956 10	
Seed	53 75—	2,009 85

Feed	314 45	
Seed	114 95—	429 40

December 19—

Feed	1,113 46	
Seed	15 00—	1,128 46

Feed	606 68—	606 68
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Total Receipts\$36,438 43

Total Expenses\$12,830 74

RECEIPTS AND EXPENDITURES ON FEED AND SEED ACCOUNT FOR
EIGHTEEN MONTHS PRIOR TO JUNE, 1911.

1910.				..			
	Receipts.	Total.		Expense.	Total.		
January—							
Feed	\$1,733 63		Feed	\$ 906 75			
Seed	1,139 65—	\$2,873 28	Seed	420 10—	\$1,326 85		
February—							
Feed	1,834 25		Feed	876 50			
Seed	1,990 50—	3,824 75	Seed	389 85—	1,266 35		
March—							
Feed	1,860 55		Feed	1,566 27			
Seed	1,426 38—	3,286 93	Seed	416 11—	1,972 38		
April—							
Feed	864 25		Feed	833 10			
Seed	155 75—	1,020 00	Seed	196 10—	1,029 20		
May—							
Feed	1,007 25		Feed	921 10			
Seed	264 50—	1,271 75	Seed	155 26—	1,076 36		
June—							
Feed	939 75		Feed	1,165 08			
Seed	69 76—	1,009 51	Seed	161 10—	1,326 18		
July—							
Feed	1,201 64		Feed	680 25			
Seed	30 00—	1,231 64	Seed	400 00—	1,080 25		
August—							
Feed	1,180 80		Feed	1,003 84			
Seed	208 25—	1,389 05	Seed	107 00—	1,110 84		
September—							
Feed	1,217 80		Feed	867 50			
Seed	500 59—	1,718 39	Seed	191 90—	1,059 40		
October—							
Feed	2,307 27		Feed	920 65			
Seed	488 83—	2,796 10	Seed	241 69—	1,162 34		
November—							
Feed	1,521 85		Feed	1,210 25			
Seed	134 35—	1,656 20	Seed	179 10—	1,389 35		
December—							
Feed	1,582 20		Feed	1,318 84			
Seed	25 00—	1,607 20	Seed	320 45—	1,639 29		
1911							
January—							
Feed	1,420 85		Feed	411 45			
Seed	917 25—	2,338 10	Seed	50 00—	461 45		
February—							
Feed	1,629 50		Feed	744 15			
Seed	1,624 81—	3,254 31	Seed	146 75—	890 90		
March—							
Feed	1,743 80		Feed	1,102 16			
Seed	983 00—	2,726 80	Seed	300 50—	1,402 66		
April—							
Feed	1,558 14		Feed	1,855 00			
Seed	89 00—	1,647 14	Seed	181 35—	2,036 35		
May—							
Feed	1,705 45		Feed	2,088 83			
Seed	71 50—	1,776 95	Seed	300 60—	2,389 43		
Total Receipts	\$35,445 10		Total Expenses	\$22,629 58			

PURPOSE OF COMPARISON.

The above tabulation and comparison is made with a two-fold purpose—first, to call attention to the extent and magnitude of the feed trade in this State. The Tennessee feed law imposes a tax of twenty cents on each ton of concentrated feed stuffs. You note from the above balance sheet that for the past eighteen months of our administration there has been collected \$36,438.43. This amount, less \$5,141.64, seed funds, leaves \$31,296.89, which, at twenty cents per ton, means that there has been tagged and stamped, sold and consumed, one hundred and fifty-six thousand four hundred and eighty-four tons of mixed feed during this period, which of course does not include whole hays, corn stover, whole grains, pure wheat bran, shorts, middlings, etc. This vast amount consumed denotes to some extent the live stock interests and value in the State, and as Tennessee's advantages and opportunities become more apparent as being adapted to dairy and live stock just so will the sales in this commodity of mixed feeds be increased accordingly.

I next wish to call your attention to the fact that your policy of curtailment has been successful, as proven by the above compilation of receipts and expenditures. This department, with four men, has collected from feed and seed, \$36,438.43, with an expense, including salaries, chemical analyses, printing, stamps, and every other item, of \$12,830.74, leaving a net profit to the State of \$23,607.69. For the eighteen months prior to your induction into office there was collected through the efforts of from nine to eleven inspectors, \$35,445.10, at a total expense of \$22,629.58, showing a net profit of \$12,815.55, as compared to \$23,607.69, or a net gain in favor of your policy of \$10,792.14. This result speaks for itself, and needs no comment.

An inventory of our stamp supply on this date shows that we have on hand the following:

635,000	100 lb. stamps	765,000	25 lb. stamps
750,000	75 lb. stamps	530,000	10 lb. stamps
750,000	50 lb. stamps	570,000	8 1-3 lb. stamps
	290,000	5 lb. stamps	

Beginning a new year with this amount on hand, paid for, means that our expenses will be lighter, and the savings greater than for the preceding year.

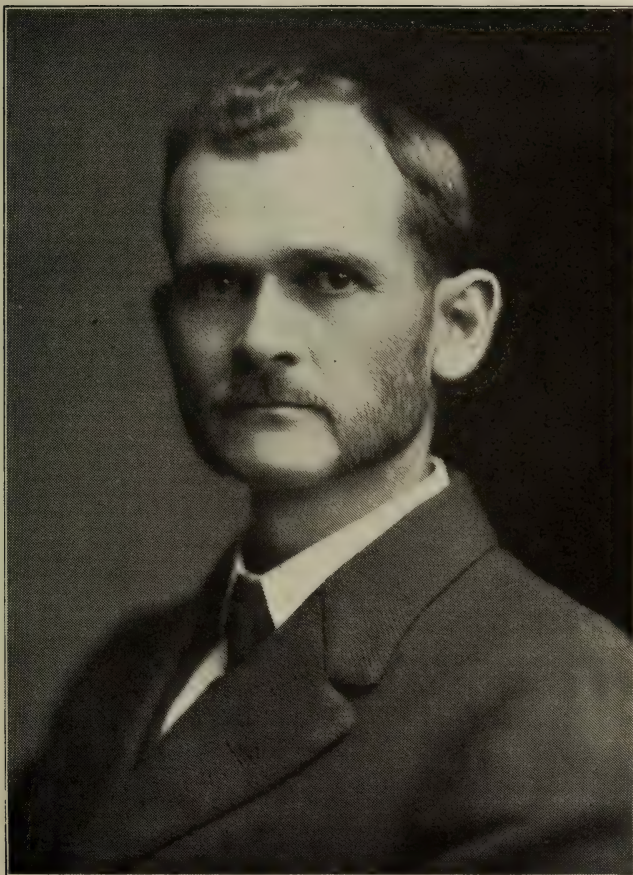
In closing this report, I desire to most sincerely and heartily thank you for the uniform and courteous treatment you have always accorded us in the performance of our several duties.

Respectfully submitted,

A. L. GARRISON,

December 19, 1912.

Chief Feed and Seed Inspector.



DR. J. S. WARD,
Apiary Inspector.

APIARY INSPECTION.

Report of Dr. J. S. Ward, Inspector.

NASHVILLE, TENN., Dec. 19, 1912.

To the Tennessee State Board of Entomology:

SIRS—I respectfully submit the following report of my duties as Inspector of Apiaries for the first six months of my commission.

My commission as Inspector of Apiaries for Tennessee was received June 6, 1912, and I at once entered upon my duties as such, in accordance with House Bill No. 70, Acts of 1911. Former Inspector J. M. Buchanan, of Franklin, Tenn., turned over to me the names and addresses of about eight hundred Tennessee bee keepers that he had collected during his services. To each of these I mailed a copy of the apiary law and the following announcement of the change in the inspector:

“This announces the appointment of Dr. J. S. Ward as State Inspector of Apiaries, to fill the vacancy lately made by the resignation of J. M. Buchanan, of Franklin, Tenn. Dr. Ward asks the cooperation of the bee keepers of the State in his efforts to protect the honey industry from the different bee diseases. Correspondence is solicited, and reports of bee diseases will be given prompt attention.

Address

DR. J. S. WARD,
State Inspector of Apiaries,
Nashville, Tenn.

WORK OF INSPECTION.

The month of June was spent in doing inspection work, mostly in Davidson, Maury and Rutherford counties. Only one yard was found infected with foul brood. This was given radical treatment, with satisfactory results. This month's inspection work, however, was without guidance so far as reports of diseases were concerned, and much of the time was used in giving instruction in the more approved methods of bee-keeping.

EXHIBIT WITH AGRICULTURAL TRAIN.

The Tennessee Agricultural Train started on its tour over the State on July 1. On July 4 the Chairman of the Tennessee Board of



A Corner of Honey Exhibit at Tennessee State Fair, 1912.

Entomology instructed me to at once join the train at Franklin, Tenn., with an apiary exhibit, and spend the months of July and August in an educational campaign in the interest of the bee-keeping industry.

The exhibit, being hastily prepared, was not as complete as desired. It consisted, however, of observatory and working hives, with frames of foundation drawn comb, division boards, and queen excluders; extractor, an uncapping melter, smoker, veils, hive tools, feeders, extracted and comb honey, specimens of Caucasian, German and Italian queens and a good working colony of bees in an observatory hive, with super. This apiary exhibit, while small, proved one of the most attractive exhibits on the train. A working colony of bees in an observatory hive with glass sides, so the bees could be seen in their movements over the comb, was an interesting revelation to the thousands of people who passed through the train.

Demonstrations and instructions in bee-keeping were given in the car by the exhibit at every stop the train made throughout the State. In addition to these demonstrations in the car, about one hundred open-air lectures were given on bee-keeping as a practical and profitable industry.

Literature on bee-keeping as a practical and profitable industry was distributed until the supply was exhausted. Much interest was

manifested in the modern methods of keeping bees, with many calls for bulletins, books and pamphlets of instruction.

The names and addresses of bee-keepers and those interested in the honey industry were gathered at every stop the train made. These have been filed, both alphabetically and by counties, for ready reference and convenience in mailing out bulletins and other literature of instruction.

NEED OF EDUCATION IN BEE-KEEPING.

While on the train we were particularly impressed with the need of education and instruction in bee-keeping among bee-keepers. Old and unprofitable methods should be discarded and all the practical, modern methods should be taught, so as to be able to gather the tons and tons of honey that are going to waste every year. Thousands of acres of Tennessee soil are covered every spring with white clover blossoms, from which we get the finest of honey. This natural resource of wealth should not be allowed to go ungathered because of ignorance. According to the past census report issued by the Government, Tennessee ranked third in the number of hives or colonies, but only fifth in honey production. This low place in honey yield grows out of the fact that the majority of the three hundred thousand colonies in the State are kept in old-fashioned "gums" or home-made boxes, and cared for after impractical and unprofitable methods. This is not as it should be, and your Inspector of Apiaries will exert himself to develop the industry through lectures, demonstrations and the mailing of bulletins, circulars and letters of instruction.

APPROPRIATION TOO SMALL.

This educational work, however, will be much hampered by the present small appropriation. One thousand dollars falls far short of the needs to promote this industry. The annual income from honey and wax is only about twenty-five thousand dollars, when the available natural resources are approximately two million dollars.

The work on the Agricultural Train stopped September 1. Inspection work was then resumed and continued until cold weather. Most of the work was done in Robertson, Williamson and Bedford counties. The losses from diseased colonies in Bedford County were heavy. Whole apiaries were wiped out with black brood, and the bee-keepers discouraged. Nearly two weeks were spent in this county treating colonies and giving instruction. At no place was my inspection work resented. Every bee-keeper was willing and ready to cooperate with me.



A Tennessee Apiary Producing Annually 5,000 Italian Queen Bees, Representing a Net Income of \$3,700.00.

LECTURES GIVEN.

After advising with the Board of Entomology, a lantern outfit was purchased for giving illustrated lectures on bee culture during the winter months. Lectures with and without the lantern have been given during October, November and December at the following places: Jackson, at the West Tennessee Farmers' Convention; Fairfield, Water Valley, Bellbuckle, Nashville, Capers, Egansville, Smyrna, Bethel, with two other engagements at Oakland and Dosset that failed. Sick-ness prevented a lecture at the Middle Tennessee Farmers' Convention at Nashville.

REPORTS OF DISEASES.

The number of reports of bee diseases have been disappointing. The fear of having their bees destroyed, or discouragement and indifference, or a lack of confidence in curative and preventive treatment, or ignorance of the apiary law, has made the bee-keepers slow about reporting troubles.

After studying the conditions of the honey industry in Tennessee for these six months of my commission I have outlined the following plan of work for the remaining winter months: First, to continue the lecturing; second, to obtain as far as possible the names of all the bee-



A Tennessee Apiary Yielding 5,000 Pounds of Honey Annually.

keepers in the State; third, to mail out literature on bee-keeping; fourth, to invite cooperation and insist upon reports of bee diseases. A tabulation of all reports will be kept and arranged for a vigorous inspection campaign in the early spring. To obtain the data necessary for the most effective work, the following letter was mailed out in December to the bee-keepers in the State:

CIRCULAR LETTER SENT OUT.

Dear Sir—It is the purpose of the Tennessee Inspector of Apiaries to aid the bee-keeping interests of the State in every possible way. Bulletins, circulars, etc., on bee-keeping will be mailed out from time to time. Illustrated lectures on bee culture will be given during the winter months, with field demonstrations during the spring and summer months. Especial attention will be given to the reports of bee diseases.

We ask for the cooperation of the bee-keepers in this work, and kindly insist upon your answering the following questions and mailing them to me in the enclosed envelope:

1. Your name and address.
2. What race of bees do you keep?

3. How many colonies of bees have you?
4. How many are in patent hives?
5. How many are in old-fashioned "gums?"
6. Do you work for extracted, comb or chunk honey?
7. What is your principal source of honey?
8. Are you troubled with any plant yielding bitter honey?
9. What is your average yield of honey per hive?
10. Have your bees been affected with any disease?
If so, please state fully the nature of trouble.
11. How many hives did you lose last winter, and from what cause?
12. Have any bee diseases been reported in your neighborhood?

Please give me the names and addresses on the enclosed blank of all persons in your community who keep five or more hives of bees.

Very truly,

J. S. WARD,
Inspector of Apiaries,
Nashville, Tenn.

EXPENSE ACCOUNT.

Inspector's expense account for the first six months of his commission:

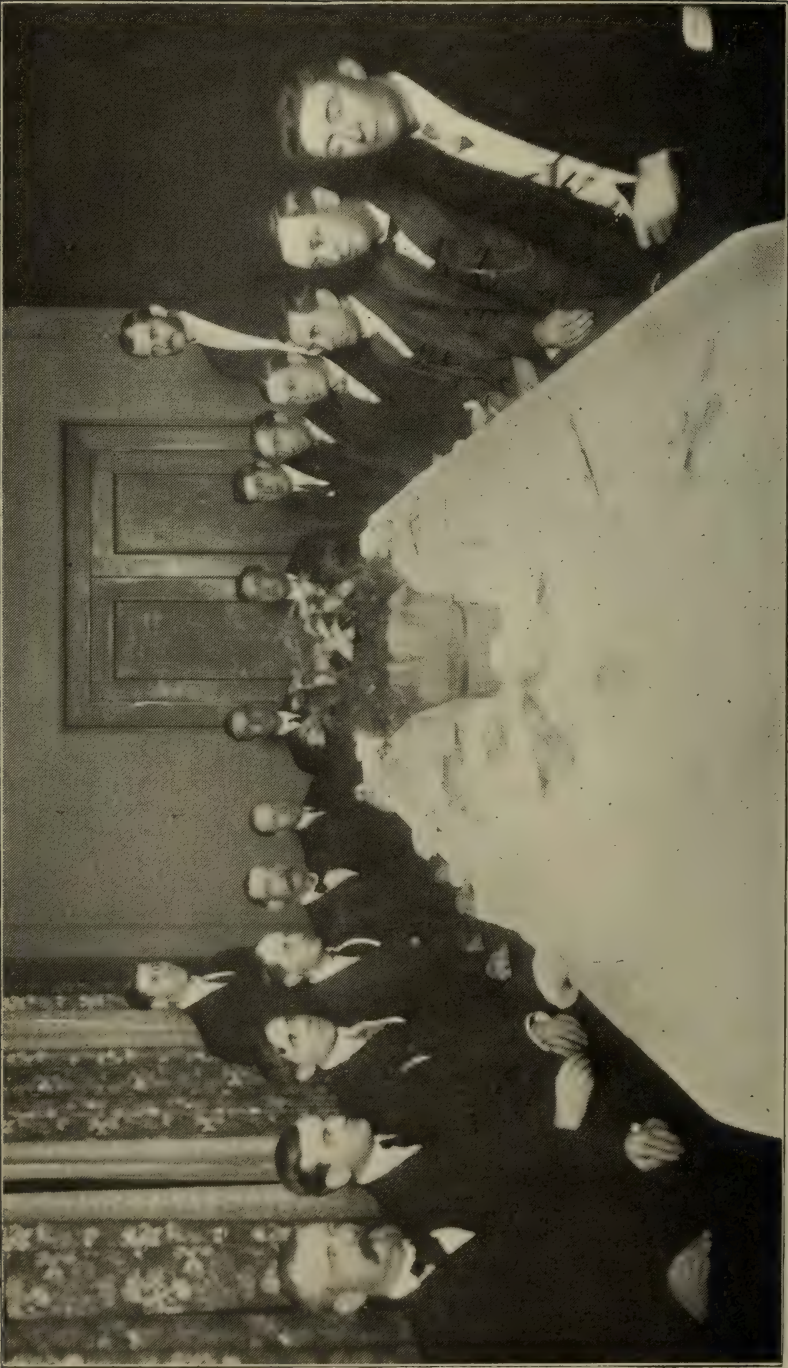
June	\$ 67 98
July	97 63
August	104 00
September	118 92
October	106 50
November	96 41
	<hr/>
	\$591 44

Respectfully submitted,

J. S. WARD,
Inspector of Apiaries.

DEPARTMENT FORCE ENTERTAINED AT DINNER.

On the evening of December 20, 1912, the office and field force of the Department of Agriculture was entertained at dinner at the



Office and Field Force of the Department of Agriculture at the Annual Banquet, at Tulane Hotel, tendered by Commissioner Peck, December 20, 1912.

Tulane Hotel. This was the second banquet tendered the force by Commissioner T. F. Peck, and this feature is an annual affair of the Department. The work of the closing year was discussed and plans outlined for future work. Those present at the dinner were Commissioner T. F. Peck, George C. Taylor, Private Secretary to Governor Hooper; Dr. George R. White, State Live Stock Inspector; T. G. Settle, Chief Clerk; A. L. Garrison, Chief Feed and Seed Inspector; R. T. Berry, Assistant Commissioner for West Tennessee; Jesse Tomlinson, Assistant Commissioner for Middle Tennessee; S. E. Reynolds, Assistant Commissioner for East Tennessee; Noble C. White, Feed and Seed Inspector for Middle Tennessee; A. M. Stout, Feed and Seed Inspector for West Tennessee; J. W. Wynn, Feed and Seed Inspector for East Tennessee; Prof. G. M. Bentley, State Entomologist; Dr. J. S. Ward, Apiary Inspector; J. W. Russwurm, Secretary State Fair; H. N. Hardeman, stenographer, and Oscar Bussell.

On this occasion, Commissioner Peck was presented a cut glass water set by the Department force, the presentation speech being made by Mr. A. L. Garrison, in the following words:

MR. TOASTMASTER:—If you will allow, I would just like to remark upon the significance of this occasion. There is nothing unusual to hear of the delegates to a meeting of a wholesale or retail merchants' association banqueting. The same can be said of the banker, the druggist, the manufacturer, and practically all other avocations. But in my opinion this occasion bears a great deal of significance, because it is so very unusual to see a group of farmers gathered around the festive board. It is an index finger pointing to a new era in our agricultural pursuits, revealing the fact that the farmer is beginning to realize and appreciate the honorable position he occupies in his chosen avocation.

I am not going to make a speech. If I were I would not go beyond the borders of Tennessee for a subject. I would not speak of the Rio Grande, the Nile or the Danube, but would speak of our own beautiful rivers, our own roaring mountain torrents, our own babbling brooks and rippling rills. I would speak of our own beautifully plumed birds, the song of the nightingale and warble of the mocking bird. I would not speak of the snow-crowned peaks of far away Greenland, but I would paint to you the beauties of our mountains, their coves and valleys nestling among them. I would talk to you of our own Southern skies. I would not forget the brawn, the muscle and the sterling manhood of our own great citizenship and our fair women, with their sense, sentiment and sweetness. But I am not going to speak on any of these subjects—I arose for another purpose—that of expressing

our thanks and appreciation to our host for his substantial entertainment on this occasion. I am not going to refer to him as that "grand old farmer," but I will refer to him as the farmers' friend, the man of and for the New South—"a live wire," "a red-hot proposition," a young farmer with energy, push and capability.

Capt. Peck, your official family has delegated me to present to you a slight token of our friendship, good will and good fellowship. Its value is intrinsic, but we ask you to take it and the world of sentiment we wish it to convey. May the sincerity of its presentation linger with you through a brilliant career. May you not forget even when flits across your pathway the dark shadow of death, when you are forced to step down into the cold, chilly waters of that river we must all cross, when you stand before the great white throne, may you still remember.

TENNESSEE STATE FAIR.

Report of T. F. Peck, Chairman of State Fair Board of Trustees.

His Excellency, B. W. Hooper, Governor:

SIR—As the law directs, I herewith submit report of the Tennessee State Fair for the years 1911 and 1912:

The transfers of the property to the Board of Trustees from the Tennessee State Fair Association and Davidson County was made on July 1, 1911. The property, known as Cumberland Park, contains about 110 acres, with grand stand, mile track, one-third mile track, covered, for winter training, barns containing 600 box stalls, hog and sheep pens, cattle hitch stalls, many cabins, brick exhibit building built by the County of Davidson. All this property, together with fixtures, sprinkler, team of horses, harrows, plows, club house furniture and other things, was purchased by the County of Davidson at a cost of \$175,000 and turned over to the State for the State Fair for 99 years, without any cost to the State, the only consideration being the payment of \$1 per year.

VALUATION OF PROPERTY.

The appraisers appointed by the County Court valued the property at \$225,000 before they made the purchase.

The administrative expense of maintenance, salaries, etc., were assumed from the close of the 1910 fair. This maintenance expense amounts to about \$1,000 per month, or for the 24 months a total of \$24,000, and is outside of the expense incident to holding the fair, such as installation of exhibits, amusement features, payment of premiums, and extra force employed during the fair, policing, etc.

The receipts from the 1911 fair amounted to.....	\$55,836 65
The expenses of the 1911 fair, including maintenance during the year was	62,743 72
Leaving a deficit of	6,906 07
The receipts of the 1912 fair amounted to	47,577 43
Total expense for the fair, including maintenance.....	64,066 87
Leaving a deficit of	23,395 51

PERMANENT IMPROVEMENT.

The Legislature of 1911 appropriated for permanent improvements

on the fair grounds for two years the sum of \$20,000. This sum has been expended as follows:

Seats, grandstand	\$2,888	39
Floor, Davidson County Building	1,085	00
Covered track	3,923	37
Resoiling Mile Track	6,335	00
Refencing grounds	834	34
Subway	1,650	00
Concrete seats	1,778	00
Toilets	617	70
Laying water pipes	295	94
Road and walkways	823	00
Flooring and roofing cattle barns and saddle paddock	1,125	00
Fire apparatus	679	00
Multigraph	400	00
Additional seats, showcases and sundry equip- ment	734	77
Track equipment	226	00
<hr/>		
Total.	\$23,395	51

It was necessary to spend \$23,395.51 for permanent improvements in addition to the amount appropriated by the Legislature.

CAMPAIGN OF PUBLICITY.

When the fair became a State institution in fact, it was the duty of the Trustees to make the fair State-wide in scope. This could be done only by a campaign of publicity that was aggressively conducted, and resulted in increased interest and attendance from over the State and an increased number of exhibits from a wider range of territory. The State Fair is one of our greatest educational institutions for the agricultural interests, and it is producing results. The Tennessee State Fair has taken front rank with the oldest and best state fairs in the Union, and it has done so with the least assistance from the State. When we consider the character of fairs held, and consider available means for holding the fair, it is a wonder that so much has been accomplished with so small a deficit.

APPROPRIATIONS BY OTHER STATES.

The following table shows the amounts appropriated by various

States for improvements of State fair grounds for the year 1911, also for the past ten years, and the amounts appropriated by various States for State fair assistance in general:

State	Amt. appropriated for improvements in 1911.	Amt. appropriated for improvements for past ten years.	General appropria- tion, 1911
California	\$ 6,216 95	.....	\$55,000
Illinois .....	.....	\$448,600 00	.....
New York	51,294 95	800,000 00	500,000
Iowa	109,775 04	344,000 00	85,000
South Dakota	4,969 67	97,000 00	70,000
Washington	5,897 62	125,000 00	30,000
Minnesota .....	.....	428,999 90	.....
Indiana .....	.....	100,000 00	.....
Kentucky .....	.....	.....	65,000
Wisconsin	150,000 for three years.		

Tennessee has appropriated \$5,000 per year since the organization of the Tennessee State Fair Association, for premiums, until the property was taken over by the State two years ago, when the Legislature of 1911 appropriated ten thousand dollars a year for permanent improvements. Nothing during that time for premiums.

ORGANIZATION OF BOARD.

The organization of the Board of Fair Trustees now conforms to the law, and meets the approval of the three division farmers' institutes and the division County Fair Associations. The above-named organizations are in full accord with the Tennessee State Fair.

The publicity campaign conducted during the summer of 1912 in connection with the Agricultural Special aroused interest in and appreciation of the Tennessee State Fair. The farmers and stock-breeders realize its educational value, and will strongly sanction a liberal appropriation by the Legislature for making the State Fair a true exponent of the agricultural and live stock development of Tennessee.

I earnestly recommend that the Legislature of 1913 make an appropriation of \$50,000 for the Tennessee State Fair, to be apportioned as follows: \$24,000 to pay the present deficit and accrued interest; \$5,000 a year for two years for premiums on strictly Tennessee products, and \$8,000 per year for two years for permanent improvements.

Respectfully submitted,

T. F. PECK,

Chairman Board of State Fair Trustees.

Below is the amount paid each trustee by the secretary of the fair for 1911, in first column, 1912, in second column and by the State Treasurer in third column. The fourth column shows the total paid trustees from June, 1911, to December 31, 1912:

Name of Trustee.	1911.	1912.	Paid by State Treasurer.	Total Amt. Pd.
W. F. Barry	\$ 30 00	\$ 00	\$266 55	\$296 55
W. T. Roberts	38 00	198 40	334 10	570 50
F. G. Buford	37 80	81 25	115 62	234 67
W. R. Reeves	33 00	72 13	317 68	422 81
H. A. Morgan	41 70	00	27 96	69 66
Geo. Campbell Brown	45 00	00	59 60	104 60
J. S. Henderson	341 70	111 71	252 00	705 41
Rob Roy	00	116 25	31 49	147 74
J. H. McDowell	00	57 50	238 16	295 66
S. N. Warren	00	46 20	34 72	80 92
R. L. Burch	00	5 00	85 00	90 00
Emmett Cooper	00	44 50	10 00	54 50
May Overton	00	00	60 00	60 00
C. C. Henderson	00	00	93 09	93 09
Total	\$567 20	\$732 94	\$1,925 97	\$3,226 11

The following new Trustees: W. B. Stokeley, taking the place of W. R. Reeves, attendance at one meeting, Nov. 26.....\$ 29 70
 Jo. D. Johnson, taking the place of W. F. Barry..... 24 12
 R. T. DeBerry, taking the place of J. H. McDowell..... 23 94

Making a grand total\$3,303 87

TALKS TO FARMERS.

Since the beginning of Commissioner Peck's administration of the affairs of the Department of Agriculture, seventy-eight weekly letters, or Talks to Farmers have been issued and have been published in nearly all the newspapers of the State. Below are some of the subjects discussed, and they are reproduced here for reference by the farmer.

LIME ON THE SOIL.

Many farmers are seeking information concerning the use of lime on their soils. To supply this information we have compiled the following from the best authorities in the country on the subject:

LIME FOR TENNESSEE SOILS.

The question of profit is the principal thing the farmer has to solve. Farming is a profitable business when carried on as it should be. There is no better place for farming than in Tennessee. Tennessee has the greatest variety of soils, and the farms run all the way from those which have been robbed of their fertility by bad cultivation of crops and the criminal negligence of the soils, to those which have the richest alluvial lands; there are few which should not be the most profitable. It depends very largely on the man who owns and operates the farm whether it gives good profits or not.

To succeed today the farmer must take advantage of the best methods. He must pay special attention to the preservation of his soil's fertility. If it is run down he must bring it back. He can do this. He cannot only maintain the present richness of the soil, but he can steadily increase its fertility by the use of proper methods. Increasing the fertility means the growing of larger yields at relatively smaller cost. Two tons of hay to the acre will cost slightly more than one ton; a bail of cotton but little more than a quarter of a bale; 150 bushels of potatoes not much more than 100 bushels; and so it is through all the crops the farmer produces. The man whose soil has run down or whose soil is naturally defective in some way, through the lack of humus or nitrogen or some other necessary constituent, is the man who most needs to adopt measures to build up his land, to call to his aid the legumes, the fertilizers, the proper diversification of crops, to introduce humus through the application of manure and the growing of legumes and to correct any sourness or bad physical conditions by the use of lime. It cannot be impressed too strongly upon the farmers of Tennessee that they may add very greatly to their profits, may



Bradley County Corn and Tomato Club Boys and Girls, and Exhibit, at Cleveland, Tenn.

frequently turn little or no profit into splendid returns which will make them the most prosperous farmers in the world, if they will take proper measures to put their soils in the best possible shape.

The subject of the liming of soils is a pregnant one. It has had the close study of all the best farm experts and teachers; it is one that should have the attention of every farmer in the State. Unfortunately there are large areas of our farm lands which are urgently in need of more lime, because they lack nitrogen and humus. The only way in which to permanently get these lands into proper condition is by the use of lime in some of its forms. Such use is not new.

Today, however, experiments and study have put its use upon a scientific basis. The farmer may learn just what is to be done, just what the application of lime to his particular soil and for his special crop will do.

Tennessee is fortunate in the supply of lime that is available for the farmer's use. It may be obtained easily and at such cost as to make its use most profitable. The forms in which it may be obtained include ground limestone, burnt or slaked limestone, ground oyster shells, ground phosphate rock and marls. While there is some difference of opinion among experts and farmers as to the best form in which to use lime there is no difference in opinion as to the great value of its use on the land for soils deficient in lime and for most crops. The selection of the special form to be used must be determined by the farmer himself. It will naturally depend to a considerable degree on his location with reference to the supply, the cost of the different kinds and on the special needs of his soils. The aid of the experiment stations and the agricultural experts of the various States and of the United States Government will always be available in determining the necessities of particular soils. The publications issued by the general government and the States will guide the farmer in the study of his soils with special reference to the use of lime.

In a sense carbonate of lime is a plant food, yet its action on the soil is nearly independent of that fact. It is an indirect enricher of soils. The action of carbonate of lime is in three directions. First, its presence in the soil causes vegetable matter decaying in the soil to form the soft brown humus or vegetable matter so necessary to the highest fertility. Without abundance of carbonate of lime no humus forms. With much carbonate of lime soils become fully charged with humus. The next fact is that carbonate of lime stops the waste of nitrogen from the soil. Decaying matter forms a soluble stuff called nitric acid. Nitric acid is the priceless spirit of plant life, the hardest thing to get into the soils, the hardest to preserve. Nitric acid is

soluble and leaches easily away in the soil water. Now, when nitric acid touches carbonate of lime the two unite; the new compound is called calcium nitrate; that remains fixed in the soil and does not leach away. So carbonate of lime fixes both humus and nitrogen. But where is a soil to get its nitrogen?

Nitrogen is not found in the rocks nor in soils made from decay of rock. It comes from the air. There is about \$7,000,000 worth of the stuff over every acre of land. But plants cannot get it; they cannot absorb nitrogen through their leaves as they do carbon. Carbonate of lime has in it no nitrogen, yet it gives nitrogen to the soil. Bacteria do the trick. Now these convenient bacteria cannot live in sour soils. They revel in soils filled with carbonate of lime. All soils deficient in carbonate of lime are sour soils. Hence all soils filled with carbonate of lime are poor soils; they grow rapidly barren when cropped. The decline of fertility of lands in the United States is directly connected with the using up of three things; soil humus, nitrogen and phosphorus. Carbonate of lime will help create humus, will cause the creation of nitrogen. Similarly, though from different chemical reasons, it stops the waste and disappearance of phosphorus. Soils deficient in lime carbonate are ever hungry soils, and feeding them with manures or chemicals is but a temporary alleviation. They are soon hungry again, for without lime they cannot hold what is given them. So soils rich in carbonate of lime, given some phosphorus, some potash as it is needed, then planted to clovers, to alfalfa, store riches from the air, store humus, become rich automatically. Lime may act upon the soil in three ways—namely: chemically, physically and biologically.

Chemical Action.—Lime acts upon the insoluble potash compounds in the soil, changing them into forms available as plant food. This action should not be depended upon, however, as a means of supplying the crops with available potash to the exclusion of artificial fertilizers, for unless the soil contains an almost unlimited supply of potash we are only hastening the time when the soil will be depleted of this form of plant food. Whether or not lime affects the availability of the insoluble phosphoric acid compounds is a disputed question.

The most important chemical action of lime upon soils is to "correct acidity." Soils that have been cultivated for a great many years may become acid, due to the accumulation of organic acids produced by the decomposition of organic matter. Many crops are affected by the acid condition of the soil, and in such cases are greatly benefited by the addition of some form of lime or material containing lime such as marl or hardwood ashes.

Physical Action.—Heavy clay soils that puddle and bake after a rain are benefited by the addition of lime. It acts beneficially upon a soil in this condition by binding the fine particles together in “crumbs,” thus making the soil more friable and easy of cultivation. It also makes it more open and porous, thus facilitating the movement of air and water in the soil. The action of lime on sandy soils is quite the reverse of that on clay soils, since it binds together the loose particles of sand and makes the soil more retentive of moisture.

Biological Action.—The decomposition of organic matter added to the soil in the form of barnyard manure, green manure, stubble, etc., is brought about by the action of the numberless bacteria that live in the soil. Certain of the soil bacteria living in connection with the roots of legumes, such as the clovers, vetches, alfalfas, beans and peas, are able to take nitrogen from the air and change it into a form that is available to plants. In order for these bacteria to accomplish the most good, the soil conditions must be favorable for their best development, and this condition may sometimes be improved by the addition of some form of lime.

There are several forms of lime that may be used for agricultural purposes and the choice of the form should depend upon the purpose for which it is to be used and also upon the price.

Ground Limestone.—The word lime as ordinarily used, refers to burned lime or calcium oxide, but it is very often used to designate any form of lime without regard to its composition. Limestone, in its natural state consists of lime or calcium oxide, in combination with carbon-dioxide and is known as carbonate of lime. It usually contains more or less of magnesium carbonate, together with some iron, aluminum and sand. It was originally supposed that magnesium limestone was injurious, especially if used on the same soil for several years, but later researches have proven that this belief is untrue, and that it is equally valuable as the pure calcium limestone, for use on soils. Good limestone should contain at least 90 per cent calcium and magnesium carbonate.

The availability of the ground limestone depends upon its fineness. It should all pass through a sieve of eighty meshes to the inch. Material coarser than that may remain in the soil for several seasons before becoming available. This form of lime may be applied to the soil in almost any quantity without danger, although it is generally recommended at the rate of 2,000 to 2,500 pounds per acre.

Burned Lime.—This is also known as “stone lime,” “lump lime,” “quick lime” and “caustic lime.” It is produced from the raw lime rock by burning. One hundred pounds of limestone will produce fifty-

six pounds of burned lime. This is the most active form of lime and may be used at the rate of 1,000 to 1,200 pounds per acre. Much larger quantities are sometimes used, but the above amounts should be sufficient in most cases.

This form of lime is usually put upon the markets in lumps and before being applied to the soil must be reduced to powder form. This is conveniently done by placing the lime in small piles about the field and covering it with three or four inches of moist soil. The lime will absorb the moisture from the soil and gradually break down into a fine powder, when it may be spread with a shovel. Ground lime may be purchased at a slightly advanced price.

Hydrated Lime.—When burned lime is treated with water or steam it enters into combination with the water and forms what is chemically termed calcium hydrate or hydrated lime. This form, like burned lime, is caustic, but it is always in the powder form and may be readily applied to the soil. Fifty-six pounds of burned lime are equivalent to seventy-four pounds of hydrated lime. This form of lime is also known as slaked (slacked) lime.

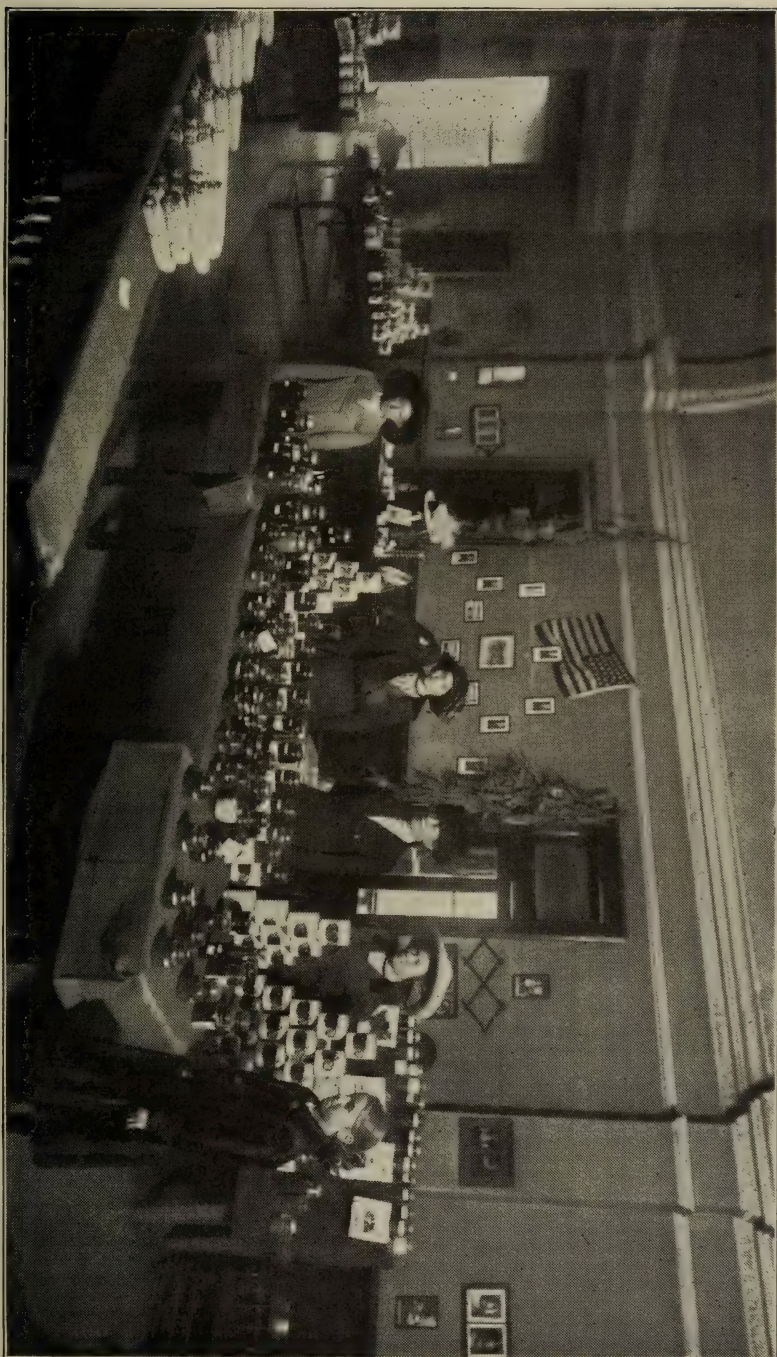
Air Slaked Lime.—When burned lime is exposed to the action of the air for any considerable length of time it gradually takes up moisture and carbon dioxide and changes to the hydrate and carbonate forms. If exposed for a sufficiently long time it will all change to the carbonate form or the state in which it was before burning. Its value lies somewhere between that of hydrated lime and ground limestone.

HOW TO APPLY.

If the lime is being applied for the benefit of any immediate crop, it should be applied, in whatever form used, after the plowing has been done, and should then be thoroughly harrowed into the surface of the soil. It is best to make the application some little time before sowing the crop.

Whatever form of lime is used, if it is in a fine condition, either as a result of grinding or of slaking, the best method of applying it to the soil is by the use of a lime spreader, of which there are a number of kinds on the market. The ordinary fertilizer drill does not spread any of these materials well except the very finely ground limestone.

It is occasionally recommended that lime in whatever form, if in a fine condition, be applied to the soil by hand, much as one would sow grain by hand. In windy weather this method is likely to prove very disagreeable to the sower. At any time unless gloves are used, the lime is very likely to irritate the hands.



Bradley County Single Farm Exhibit, at Cleveland, Tenn. The four small girls cultivated one-tenth of an acre, on one Farm, in Tomatoes.

A very satisfactory way is to distribute the material in piles two rods apart each way, and then later each pile can be spread with a shovel over an area extending about one rod in all directions from the pile—each pile is spread so as to cover four square rods of area. A fairly even distribution can be made in this way and the distribution is improved when the lime is harrowed into the soil. By this method there will be forty piles to the acre. The amount of material to be put in each pile is found by dividing the rate of application in pounds per acre by 40. If the rate be 800 pounds per acre 20 (800 divided by 40) pounds is the amount per pile. If the rate be 1,200 pounds per acre 30 (1,200 divided by 40) pounds is the amount per pile.

In applying unground or unslaked burned lime, probably the best way is to distribute in piles as described above and allow to stand until slaked. It will not require long time for the air to accomplish the slaking. A small amount of water may be applied to each pile, though this might prove something of a task. A few shovelfuls of moist soil thrown upon each pile is said to accomplish the slaking in a very short time. When the slaking has been accomplished the spreading should be done as indicated above.

LARGE AREAS NEED LIME.

Prof. H. A. Morgan says that "The Tennessee Agricultural Experiment Station finds that no large area in the State is well supplied with lime in the soil. In fact, most of the so-called 'limestone soils' seldom contain one-half pound of lime in 100 pounds of soil. One-fifth of a pound per hundred would be a fair average. Much more should be present. The trouble is that this important element has leached away by heavy rains as well as by constant cropping, so that an application of lime is badly needed. Numerous field experiments on Tennessee soils have shown that lime is a necessity to get satisfactory crops of clovers and grasses and that yields of both wheat and corn may be increased by its use. Many soils are sour. Lime sweetens sour soils so that crops such as alfalfas and clovers can be raised that are impossible otherwise."

What kind of lime shall be used? The answer to this question is, whatever is cheapest. Ease of application should also be considered. Ground limestone of about the texture of coarse corn meal at \$1.25 per ton is undoubtedly preferable to the burnt lime at the usual price. A fair amount is two tons per acre. An application lasts several years—probably once in six years is often enough to use the lime.

Prof. Morgan summarizes the reasons for the use of lime as follows: 1. It cures soil acidity and improves the mechanical and physi-

cal condition of the soil. 2. It increases crop production. 3. It increases activity of the soil and the value of commercial plant food. 4. It encourages the growth of legumes and supplies nitrogen out of the air. 5. It makes possible the growing of alfalfas and clovers. 6. It permits more economical rotations. 7. It is especially beneficial to meadow and pasture grasses. 8. It makes animal husbandry possible.

SOIL MOISTURE.

Probably no subject directly relating to practical agriculture receives so little attention and is so little understood as is the subject of soil moisture. In order to fully understand it we should know something of the functions it performs in producing a crop, and the great importance which attaches to it in the growing of our various farm crops. We all know that the average farm crop will grow more rapidly and produce larger yields when moisture is plentiful in the soil than when there is not sufficient. But those who have never given this important matter sufficient consideration fail to realize its importance, or the methods by which it may be conserved in the soil in sufficient quantities to produce the desired results. The ordinary farm crop of whatever kind is composed largely of water when it is growing, and on the principle that we can never get something for nothing, it will be easily seen how impossible to produce a good crop of grain or vegetables without an abundant supply of moisture. Some of our best scientists have claimed that it takes as much as 300 tons of water to produce one ton of dry matter in corn, and that if the necessary amount of water that is required to produce a field of corn equal to sixty bushels per acre was upon the ground at one time, it would cover the soil to the depth of eight or ten inches. This may seem almost incredible to those who have not paid particular attention to this subject, but it was only by careful chemical analysis that such facts were discovered. Still the average farmer can draw a great deal from his own personal experience and observation. He remembers that when there was sufficient rain that he would raise better crops on the same ground than seasons when the rainfall was short; he can tell the important part moisture plays in his growing crop if he will gather 100 pounds of green corn when in the roasting ear stage and drive off all the moisture by thoroughly drying his 100 pounds will be reduced to less than one-fourth that weight, showing what per cent was water. He can also go a step further and reduce to ashes the dried corn and he will then have in the 100 pounds the number of pounds of water.

The weight of the ashes will show the amount taken from the soil, and the portion consumed by fire represents the amount taken by the plant in its growth from the air. According to analysis of some of the various farm products we find that growing corn is about 90 per cent water, potatoes 87 per cent, while green clover is 85 per cent. So important is moisture considered in producing crops by some of our scientists that they have claimed that with an abundant supply of moisture in the soil at all times during the growing season good crops could be raised regardless of the fertility of the soil or chemical composition except in as far as this composition would affect its moisture supply. This idea cannot be borne out by common experience on the farm. While it is necessary to prepare our soils for holding moisture by deep plowing and the addition of vegetable matter and conserve it by shallow surface cultivation, it is equally as important to properly provide for taking care of the drainage proposition. Water soaked land will not produce good crops. The soil must be provided with air and water circulation. Now, if these statements regarding the importance of this element in our soils be true we should adopt the methods whereby we can retain or conserve enough moisture in our soils to produce profitable yields. The first method is that of thorough underdrainage. Without underdrainage no land will retain moisture to its fullest capacity, unless its composition is such as to afford natural drainage, but where the land is level and heavy underlaid with a clay subsoil it should be underdrained in order to put it in proper condition to hold moisture. Water soaked soil becomes hard and cloddy when dry, and hard, lumpy soil will not hold sufficient moisture to grow crops during dry weather. The more our soils are cultivated the more apparent this fact becomes to the thinking, progressive farmer. The humus is worked out and the mechanical condition of the soil is unsatisfactory. No one thing a farmer can do in his farming operations will do so much towards increasing the moisture in his soil as thorough and complete tillage. The breaking up of the soil into fine particles, as is done by a thorough system of cultivation, always prevents too rapid evaporation of the soil moisture and retains it in the soil to be taken up by the plants. This not only dissolves the plant food in the soil, but it keeps up that rapid circulation through the growing plant necessary for its vigorous and healthy development. Plants always get their nourishment through their roots. They not only get their nourishment through their root system, but that this food must all be dissolved in water and enter the plant in a very diluted form. This being true, it will be obvious to almost any one that just in proportion to the moisture content in the soil will the growing plant be able to receive

its nourishment. When we consider that plants grow and develop just like animals, according as they receive nourishment, we can begin to realize the part that soil moisture has in the growth and development of our crops. A soil may contain an abundance of plant food and yet its condition be such from lack of water to dissolve that food that the plant will wither and die for lack of nourishment. Another method of increasing the water holding capacity of our soils is by enriching them by the application of barnyard manure. Any soil that has a good supply of humus in it will hold moisture in it much longer and in greater quantities than those where this important element is lacking. This will be corroborated by comparing the crops grown on our new lands with those grown on our old worn lands. Most people think the marked difference in yields between these two kinds of soils is due to the greater abundance of plant food in the new ground. While we readily concede that a virgin soil will probably have more available plant food in it than the older soils, yet we are firmly of the opinion that the main difference lies in the new ground's greater moisture holding capacity and to the larger amount of humus or decayed matter it contains. Our conclusions are based largely upon the facts that in seasons when we have plenty of rainfall and crops do not suffer from lack of moisture we have as large yields from some of our old cultivated fields as from new grounds. The important part humus plays in keeping our soil moist is recognized the country over by our gardeners and vegetable growers. We invariably see them applying a heavy application of barnyard manure each year. If they were asked to give the true reason why they apply so much barnyard manure each year their answer would invariably be, that by adding this organic matter to the soil it loosens it, thereby increasing its capacity to hold and retain moisture. They realize that almost all vegetable crops are largely watered even when matured, and they must have this water in the form of moisture in the soil or their crops cannot develop and give large yields. Now, if we agree that water enters so largely into the composition of plants and is so necessary for their growth, we will recognize at once the necessity of carefully conserving the supply of moisture in our soils. In conclusion let me say that the saving of our soil moisture is one of the great problems that confronts the farmers today. It means millions added to our income if we can put in practice methods that will insure sufficient moisture for our crops during the growing season. Better underdrainage, more intensive methods of cultivation, increased humus in our soils from the application of manures and turning under vegetable matter will tend to increase our soil moisture, bring better crops, and increased prosperity to all who can and will do so.

WASTE OF TIME ON THE FARM.

This week I want to talk about a subject that some of you possibly have never considered seriously, and it has caused the failure of more farmers than all others combined—it is waste of time. None of us like to admit that we waste time, but if we will look back over a very short period we will see where we could have done many things that we put off till tomorrow, and the duties of tomorrow left no time or place for the neglected duty of today.

I have known farmers to neglect their cleaning up, fence repairing, ditching, getting their land ready for the plow with the excuse that they had plenty of time until the time for plowing was late, and I have noticed such neglect cause land to lie idle because it got so dry and hard they could not break it.

I have known men to delay plowing by saying, "Oh, I have lots of time to get my ground ready," and did, but they waited so long that instead of getting too dry there was a rainy season that kept them out, and at last they plowed too wet and locked up the plant food and had clods to climb all summer when they could have worked in nice, mellow soil if they had started when their ground was right and been ready every time to have worked it when it was in proper condition. I mention this to show the necessity of thinking about our work and always be ready to do things at the right time. Never leave a task when everything is right for its accomplishment just because you have plenty of time. Plenty of time has caused more neglect than lack of time. There is always a right time to do our work and doing it then is more profitable than done before or after. On the farm there is a time for cleaning up our land, fences and doing general repair work so that when the ground is in proper condition for working we can be ready for it. I have always made it a rule to do such work when I could not work the soil. I looked after my harness on wet days when I could not work out of doors. So when the soil was in proper condition I was ready to work it, did work it, and it did its part; I made good crops while the other fellow did not. He blamed the land, the rain or the drouth, when the trouble with him was in leaving until tomorrow what he should have done today and when tomorrow came he would think of some gathering in town, a squirrel hunt or a good place to fish and neglected his work. The merchant who succeeds has no time to waste, he must be at his place of business all the time, he must keep in touch with all the details. If he is out of goods required he loses business. If he was to shut up his store to go hunting or fishing or to

go to town to court, it would not be long until he would be out of business. His success in business depends on his giving his time and attention to his work. No other profession but farming could get along at all if the time was wasted the farmer wastes, and there is no business or profession that will pay a man better than farming if he will give it the same ability, energy and concentration necessary for success in other professions.

In farming there are certain kinds of work that have to be done at times when conditions are right. While there is a great deal of work that can be done at any time, stirring the soil must be done when the soil is not too wet. So we should take advantage of the time that we cannot work the soil to save manure, repair buildings and fences, clean up rubbish and clean out drains. If raining there are always things indoors needing attention to employ the time. If we take advantage of the opportunities and push our work instead of letting it push us, we will always be ready to work with the soil at the right time.

Do not get the notion that farming is a life of drudgery—it is not as much so as other work—because the farmer who is on the lookout and pushing his work will be in position to take advantage of opportunities for recreation, and he has the assurance that when he goes away for a pleasure trip that his crops and his live stock are growing right along. One of the secrets of success is doing the right thing at the right time. This does not apply alone to farming—in fact, the rule that leads to success in farming will apply to other professions.

Farmers are like other people—liable to get into a rut or drift with the current and success never results. Success comes to the person who thinks and acts for himself, takes information from others, weighs it, applies such as will fit in with his own deductions, makes the most of opportunities and ready to grasp them when they offer. The successful person never puts off for tomorrow the task that should be done today.

HEALTH ON THE FARM.

This week we want to talk to the farmers about a subject in which they are vitally interested, "Their Health," the most important consideration to them and affects their success and happiness most. The farmer in laying his plans for work or pleasure predicates all on the condition that he has good health.

When our health means so much to us, we certainly should use every precaution and safeguard to preserve it.

Medical science has discovered the causes for practically all the

diseases that affect mankind and they have also found effective measures to prevent them. We remember the old adage that "an ounce of prevention is worth a pound of cure." We know that yellow fever and smallpox only a few years ago claimed their toll of thousands, but now the preventative measures have almost put both out of business. Typhoid fever still claims thousands annually, and is as easily prevented as yellow fever and smallpox, and there are a number of diseases that can be prevented by the same precautionary measures necessary to prevent typhoid fever.

The Tennessee State Board of Health contemplate the publication and distribution of a pamphlet on this subject at an early date. I hope one of the pamphlets will find its way into every home and that it will be read and its suggestions put in practice.

This week I want to offer a few suggestions on that all-important question of sanitation on the farm.

There are three things necessary to good health. First, fresh air and sunshine; second, pure water; third (and this largely depending upon the first two), keeping the seeds of disease out of our bodies.

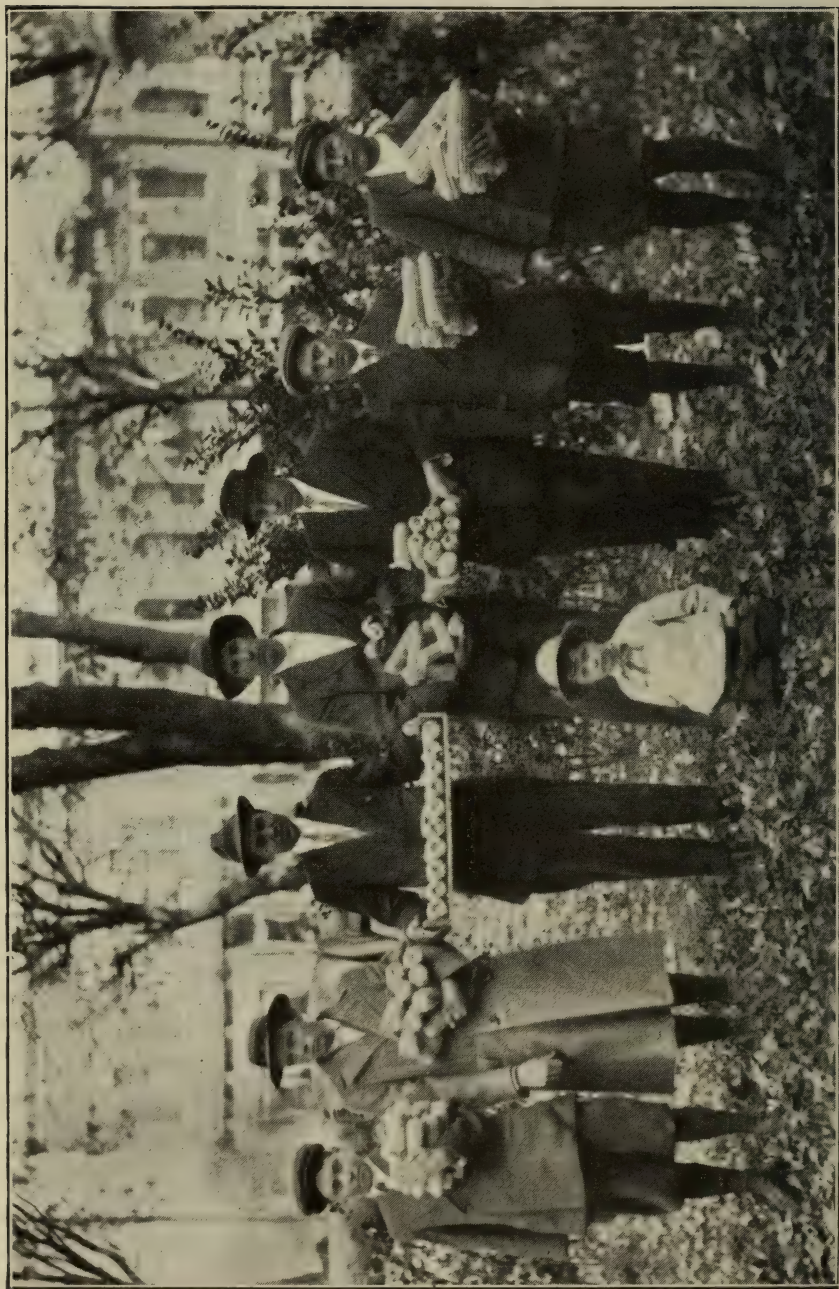
Consumption, which causes the death of more persons than does any other disease, needs only for its cure and prevention pure air and sunshine, with nourishing food; while the dreaded typhoid fever is a water-borne disease. During the day more or less fresh air is admitted to our homes from opening doors, but during the night it is too often carefully excluded. Since we spend one-third of our lives in bed, we might with profit increase our contact with fresh air and improve our health without interfering with our comfort. No one enjoys having the wind blow on them through an open window, but by covering the outside of the window with muslin, or covering a wooden frame which fits under the lower sash of the window, one can enjoy fresh air without any discomfort. Ventilation is fresh air without drafts. Try this method of obtaining it. The muslin should be a trifle heavier than cheese cloth. It will not lower the temperature of the room more than two or three degrees. Besides pure air heats easier and pure air remains warm longer than bad air. If the muslin is unbleached it will not wet through. In regard to the water we use for domestic purposes, it is not enough that water should be odorless, colorless and tasteless. It must prove to be pure under the chemist's test. Our bodies need large quantities of water inside and out. The body is truly a system of canals, and should be flushed daily. Five pints of water is none too much to drink daily. It is better than pills. Try it.

Time was when our country was new that water from any stream flowing through the farm was safely used for domestic purposes. Now

streams are so foul that fishes cannot live in them. Now the unfortunate dwellers in cities are often obliged to use such water, but we on the farms should not do so. A spring in a virgin forest may be pure, but any spring is only as pure as its surroundings. It should be built up with cement at least a foot above the surface of the ground to keep out the surface drainage water. At present the all but universal source of our water supply is some form of well. The dug well is dug just deep enough to get water, laid up with loose stones or brick and covered over with planks which dry and warp in the sun and rain, leaving cracks which admit to the well surface water, dust and filth which may be near. A dug well should be cemented up inside six or eight feet from the top and a cement cover and curb built to protect it. Probably the safest source of water on the farm is a driven well, deep and well cased to protect it. If there is within 100 feet of any source of filth contamination, there is danger to the water. Slop holes, manure piles, and outside open vaults are a menace if near the water supply.

While seeds of disease are carried into the body by air and water they are also carried by the common house fly. He is called the filthy fly, the typhoid fly. Certain it is he is the most dangerous animal on earth. The more one knows about his habits, the less one likes to speak about him in polite society. He breeds in filth, he lives in filth, and, unfortunately, he eats the same kind of food we do—but we eat at the second table. He flies back and forth from the slop holes, the manure piles, the outside open closet, into our homes where he alights upon the fruit and food prepared for the farmer's family. He is responsible for the spread of many diseases, consumption, typhoid fever, bowel diseases of children, and the list is long. Fortunately, he never goes very far from the place where he is born, so if we remove all filth from around our homes we will do away with the pest of the house fly.

On many farms it is common to find the water supply for the barns either pumped by windmill or engine or piped from distant springs, but no provision is made to supply the house with water, for bath, toilet or kitchen sink. The farmer is willing, but he says, and truly, that there is no sewerage system in the country, and he cannot dispose of his waste water, and what is the use of putting water in the house if he cannot take the sewage out beyond the cellar walls. The old style cesspool made by digging a pit in the ground, and stoning it up without cement, is a menace to health and life, and poisons the soil for long distances. If the water supply comes from a well, it may poison that; the leakage from the ill-smelling, disease-harboring outside closet may reach the well water. Even if the surface of the ground slopes right



Winners in Lincoln County Boy's Corn Club: Paul Thomas, George Turley, Knox Hutchinson, Ellis Tannery, Cortland McDaniel, Homer Spencer, Kenner Bralock and Henry Harris Thomas.

that is no reason why under ground the water runs right. So you see our homes must be provided with water supply and not depend upon wells. It will cost \$100 more or less to put in a system of plumbing, including hot and cold water in the kitchen sink, the permanent bath and the inside closet. The cost depending upon the size of the house and how much help can be given the plumber.

Now the waste water could be easily disposed of by turning it into a stream. There is a slight objection to this. It is against the law, and is not allowed unless the State gives permission. This is usually denied. If one small home could and did turn sewage into a stream others would want to. If the stream is used for domestic purposes further down, the sewage might cause an epidemic of disease. One house might cause 5,000 cases of typhoid fever. We are too civilized to do this; then what shall we do? We can build a cesspool that will hold all the sewage until it is purified. It should be built in porous soil near the surface of the ground, so the outlet will pass through the first foot of soil, the upper layer of soil being more open and contains more bacteria. The garden is a good place to run the outlet pipe, but right under the sod of the lawn is the very best place.

This cesspool will cost about \$5.00 if the farmer can build it himself, and will require one load of farm stones, not too large; one load of gravel, not too coarse; and five sacks of cement and two loads of sharp sand. This builds a cesspool 6x3 feet, and large enough for a family of five or six persons. The cover should be tight, a slab of stone or of cement with seven to nine inches of soil on top, and should not have any ventilating pipe, as the bacteria that work in it are the kind that work without air only. This tank is in effect a settling tank, and can be built of any size, shape or material so long as it is large enough to hold one day's sewage of the family, and so long as the sewage comes in so slowly that the solids have time to settle to the bottom of the tank, it will do all that was expected of it. The tank should be connected to the house by a four-inch tile drain, every joint cemented and rubbed smooth on the inside. This should be twenty-four feet long and have tilt of one-half inch per foot. It enters half way up the side of the tank. The outlet is at the top of the tank and should be of four inch tile laid with open joints, so the clear water that passes out can pass into the soil at each point. This drain should be from 40 to 80 feet long, depending on soil, laid on a tilt of one thirty-second of an inch per foot. The slanting elbow, on the inside of the tank, as in the scum a form of bacteria is working to purify the sewage. The only solid left in this tank is the mineral part; this amounts to very little in a year. It will not freeze so long as the house is occupied. There

are two reasons for this: First, the character of water entering the tank; and second, because bacteria in working produce heat. The sewage should not stand in the tank. If the expected flow is cut down, dilute it with water. The water flowing from the outlet is a clear liquid and is harmless.

In conclusion let me urge you to guard against the house fly. Get rid of his breeding places. Provide for an abundance of pure air. Guard the purity of your water supply. The money and time so spent will repay you in many ways.

COMPOSITION OF SOILS.

Soils differ in their composition. Where there is more sand than clay they are called sandy soils; where more clay than sand, clay soils. They differ in color; we have light, dark, red and black soils; then we classify them as poor or rich as they produce crops.

All soils are composed of different substances; some of these are aluminum, quartz, feldspar, iron, potash, lime, phosphoric acid, magnesia, soda and humus. There are also present in all soils, water and gases, such as oxygen, hydrogen, nitrogen and carbon, and these exert a powerful influence in changing the character of substances and making available plant food.

Humus is not an original element, it is the result of decomposition. A soil without humus will not produce vegetable growth even with other elements of plant food.

A clay subsoil is capable of great improvement, and no matter how much abused can be reclaimed.

The soil is not only a root bed, but also a food bed and a workshop for plant growth. Neither of these latter purposes can be secured if the soil be too compact. Circulation is the law of plant life, and for circulation there must be room. The mechanical texture of the soil is a matter of great importance. Through the soil comes the sap, for that reason there must be moisture; this can be provided by deep pulverization of the soil. The moisture not only furnishes the sap, but it dissolves and holds in solution plant food ready for the tender rootlets to absorb. Nearly three-fourths of living vegetation is water; about 97 per cent of the solid part is from the air and only three per cent from the soil. To determine the above facts, take a quantity of vegetable matter and weigh it green, then dry it and we find the water it contained, then burn the dried matter and the difference in weight of the dried matter and ash after burning represents the portion taken from the air. The ash left will amount to about three pounds for

every hundred pounds of dry matter, and all that was taken from the soil. This ash is composed of fourteen substances: iron, soda, sulphur, lime, potash, phosphoric acid, magnesia and others we need not mention. These fourteen substances are everywhere present in all soils. Eleven of them are in such small quantities in the ashes and are in such universal distribution in sufficient quantities in all soils that we need not worry about them becoming exhausted. Three of them are found in larger quantities in the ashes, and as a result from continued cropping would ultimately be deficient and have to be supplied in some form. These are absolutely necessary for the healthy growth of all our crops; so it is a matter of great importance to the farmer to know about potash, phosphoric acid and lime. Without these he cannot farm profitably. What iron does for man potash, phosphoric acid and lime do for plants; give a plant everything but either of these and it will die.

It is not because Tennessee soil is so deficient in plant food or because there is not the right kind of soils for the various crops, or because there is not enough rainfall, or because the climatic conditions are not right for crop production, because everyone familiar with those conditions in Tennessee know that we are especially favored in all; so we must look elsewhere for a reason why we are not producing as much of the various crops, per acre, as we produced ten years ago.

While in some sections of the State we find farmers who are improving the land, who are keeping abreast of the progress in agricultural science and methods, we find in other sections more who cling to the methods of their fathers; methods that could be practiced then because rich land was cheap and when a field was exhausted it could be abandoned and a fresh land cleared. Now that cannot be done and the sons have to continue working the same lands that become more exhausted of plant food each year, and as the humus in the soil becomes exhausted with shallow cultivation the ground washes easily, yields smaller crops and only failure can result.

It has been shown that the run down, neglected farms can be reclaimed and produce a profit while doing so. To do this requires intelligence and energy, but I want to ask what business can be successful without them. I want to say right here that a man with a knowledge of farm lands, subsoils and favorable natural conditions, can make his time and money earn more by selecting neglected farms and improving them and selling again than he can in other lines of business. I have repeatedly bought neglected farms, improved them and doubled my money on the investment. This neglected land is not as bad as it looks. In many cases where it has been cropped at a loss the fault

was in the method of cultivation, or rather the lack of cultivation. In the majority of cases the ground has been cultivated too shallow; poorly plowed, the soil not pulverized, worked when too wet, locking up the plant food, added to that indifference as to selecting seeds, then during the cultivating season allow such crops to wait too long between workings, and especially the farmers in the majority of cases over-crop themselves. There is much land in the State that neglect is the worst charge that can be brought against it. Buildings and fences have become dilapidated, briars, weeds, and sprouts have been allowed to grow unrestrained, exposed places have been washed bare, leaving galls, drains have been choked with rubbish; in fact, there is nothing attractive in the prospect to the buyer who is looking for neatness and order, but it is the opportunity for the man who knows soils and natural advantages, because he knows that he can get rid of the briars and brush; he can replace the buildings and fences; he can reopen the drains; he can heal the galled spots, and he can break up the hard pan with subsoil plows, thus turning an eyesore into a thing of beauty at a fraction of the cost of a farm that had been intelligently handled and a farm that under same handling not so productive.

I want to say to the educated young farmer who is looking for results for your money, your technical training and your energy that you will find in the neglected farms of Tennessee your opportunity for financial success for yourself and opportunity to prove to the country that Tennessee's agricultural advantages and possibilities are broader than in any other State in the Union.

We have discussed the nature, uses and composition of soils. Next week we will talk about the preservation and improvement of soils.

VALUE OF BARNYARD MANURE.

Every farmer should plan to have as many animals on his farm as he can possibly take care of, for a farm with many animals will become rich and productive because of the supply of manure, if it is saved and properly applied to the land. Experience has shown in all countries that this is the material for enriching all kinds of soil. Some chemical fertilizers, however, are beneficial on certain soils.

Manure makes the earth loose and mellow, allowing the roots and air to come in contact with all parts of the soil. After it has rotted it enables the soil to hold moisture in dry weather; it furnishes plant food to the roots of growing crops; it adds needed germs and causes the beneficial ones already in the soil to multiply, thus helping the crop.

Barnyard manure is composed largely of ground up parts of plants, and contains nearly what the plants contained. The richest manure is made by feeding cotton seed meal and other foods rich in nitrogen. Hay from cowpeas and other legumes makes better manure than from shucks, straw or grass. The cotton seed meal produced from cotton seed in Tennessee should all be fed to Tennessee animals, and the manure returned to Tennessee farms. If all the solid and liquid manure from the animals fed on the cotton seed meal was saved from 100 pounds it would have the same value as a fertilizer as 80 pounds of cotton seed meal. Animals take from the food fed them chiefly those substances that are worthless as fertilizers, such as starch and fat.

The farmer who uses cotton seed meal for feed and saves his manure makes two profits.

The manure from different animals is different in fertilizing value, because they are fed on different foods. Manure from the poultry house is several times more valuable than any other. When only the solid waste from animals is saved the farmer gets only about half the fertilizer available. If the manure pile has no roof over it, the rain destroys much of the fertilizing value. Manure that has been exposed to rain for a number of months, is sometimes worth less than half as a fertilizer for crops as it was at first; most of the plant food has been dissolved and carried off by water; some of the nitrogen has been changed into ammonia and passed off into the air as a strong smelling gas; and a large part of the soil-loosening material has disappeared or been slowly burned, for rotting is a kind of slow burning. If the manure cannot be immediately spread on the ground, a roof should be put over the manure pile.

Compost heaps are piles of manure mixed with other materials, such as leaves or cotton seed with sometimes phosphate added. Partial rotting makes the manure less coarse and makes it act more quickly on the crop. The same materials can be mixed in the furrows in the field, and when they rot there the soil prevents loss. Moreover, when the organic matter rots in the soil it causes the soil touching it to "rot," too; that is, to change some of its compounds into substances that plants can use as food.

Manure should be plowed under as soon as spread on the ground. Fully three-fourths of the weight of barnyard manure is water—large amounts must be used to the acre. In a ton of manure there is only about twenty-five to thirty-five pounds of the three precious forms of plant food (nitrogen, phosphoric acid and potash), or about as much as is in 200 pounds of high grade, complete fertilizer. The plant food in a ton of manure could be bought in the form of commercial

fertilizer for between \$1.50 and \$3.00. But a ton of manure contains, besides direct plant food, billions of helpful germs and about a quarter of a ton of organic matter, that is very beneficial in making the soil mellow and able to hold moisture. These cannot be bought in commercial fertilizers, which increase the crops chiefly in the year they are used, while stable manure makes the soil richer for a number of years.

If the farmers of the State could be made to realize the value of barnyard manure to them they certainly would take more care in saving and applying it to the soils. To waste it is to throw away money. If all the barnyard manure is saved and used and all the vegetable matter on the farm turned into the farm soil, very little additional nitrogen will be needed. It is cheaper to make nitrogen than to buy it.

We are not opposed to the use of commercial fertilizers, but we do know that much money is wasted by their injudicious use. When our farmers understand the practical methods of farming, they will need to buy very little commercial fertilizer compounded; culture and economy of home supplies will make their farms rich.

Plants do not create anything; all the growing crops do not add one ounce to the material world, nor does the death and consumption take away anything; they only change the form of the matter. It is the farmer's place to direct in these wonderful changes, without which the world would soon die. If he does this wisely he will be prosperous and happy.

DAIRYING IN TENNESSEE.

Tennessee is regarded by States further south as being further advanced along dairy and live stock lines than themselves, and some people regard Tennessee as the Mecca of good cows. Natural conditions make the State superior in some respects to others nearby for dairying, but, with all due appreciation of the progress Tennessee has made, some of these States are practicing methods which this State would do well to imitate—in fact, must imitate—if it progresses as it should.

Poor cows are the bane of dairying the world over, and any section that is not fighting this evil systematically is sacrificing great profit and harboring discouragement for its dairymen. An evil without a remedy is a condition which should not be mentioned, but for the poor cow evil we have the scales, the Babcock tester and the record sheets, which, if intelligently used, are a specific, and it is so simple that any farmer who can read and write can use it effectively. In sections where dairying is not practiced extensively individual farmers are com-

pelled to do their own record work, and this is what every farmer should do; but, since many will not take the trouble, a plan has been borrowed from Denmark whereby the farmers can hire this work done. The plan is called "Cow Testing Association," and simply means that a number of farmers combine and employ a man to visit their places monthly and keep their records for them, and each man pays in proportion to the number of cows he keeps.

When talking of getting rid of poor cows, it is inferred that better ones will take their places, and this necessitates raising them. Good cows are so scarce and their production so unreliable that raising is the cheapest and only reliable practical plan within reach of the average farmer. Most important in this consideration is the bull.

It is a fact that a large number of the best bulls in the country are slaughtered before their real value is known. To prevent inbreeding, they are sold to the butchers before their daughters come into milk, and thus have no chance to prove their worth. This condition costs the dairy industry thousands of dollars annually, and is one that can and should be remedied. County live stock associations, dairy organizations and other farmers' institutions could keep a bulletin board of available bulls, and at the meetings of these organizations dairymen could get together and effect changes which would give to each party new blood for the small cost of transporting the animal from one farm to the other.

One of the Southern States is forming bull associations in dairy communities. In such cases a number of farmers join the association and assess themselves for the purpose of buying the number of bulls needed for the community. A competent committee purchases the bulls, prescribes regulations for handling them, and distributes them to the best advantage in the various sections interested. After the bull has been in a place two years, he is exchanged for that of another section, thus giving each community new blood at no additional cost.

But with all of our cows we must have feed, and, passing by the many fine crops that Tennessee can raise, I want to put particular stress upon the silo as one of the most important factors in good feeding. Not only is it adapted to dairy cattle, but beef cattle as well. No farmer that has as many as ten head of cows can afford to be without a silo. Some may think that the discussion of silos is not necessary in Tennessee, but last summer I found men who did not even know what silage is. No cheaper or better feed can be had than silage.

Eight Southern States have organized forces for giving special aid and instruction along all lines of dairying to their farmers. These

agencies assist the farmers on their own farms in building silos, furnish them plans for dairy buildings of all kinds, teach them how to keep records of their cows, to make better butter and feed the cows properly, and assist them with any special problems that arise concerning dairying.

Other things before mentioned have dealt with farmers already interested in dairying, but South Carolina has started some work in a rural school for the benefit of children. Scales and record sheets are loaned to pupils, and they keep the weights of the milk and feeds of their fathers' cows for a certain period and bring them to school, where they are taught how to compute the value of the milk, the cost of the feed, and from these the profit or loss of the cows.

This line of work seems a little far-fetched in a program of dairy instruction, but I believe that when we get the children of the farms to see that something can be made from cows, many of them will be attracted to dairying as at least a side line to their future farming operations. But, even if this is never done, certainly there is great need for improvement in the method of handling cows and their products on the average farm. I once met a farmer who told me that he milked twelve cows and got only three gallons of milk in a day. Certainly the task of milking these cows twice a day with so little return is enough to discourage anybody, not only with dairying, but with anything that pertains to cattle. There are thousands of people living in cities who keep only one cow that will produce more than the twelve owned by this man. Better cows must be had if keeping them, even for family use, is made as common as it should be.

The advent of the boll weevil and the low production of cotton in the cotton belt are causing many sections to take an interest in all forms of live stock, and there are many States that are manifesting such an interest that it will only be a short time until Tennessee will have keen competition, and unless some of the methods for the improvement of dairy conditions are practiced intelligently, she will take a second place in dairying in the Southern States.

WHEAT CULTURE.

One of the most essential requirements in successful wheat growing is the early and thorough preparation of the land. The ideal selection for wheat land is a good clover sod, one from which a crop of hay has been harvested early enough to produce a good second-growth of clover. Get this growth as heavy as possible and turn under deeply in August or September.

Keep the disc or spring tooth harrow running over the surface



Lincoln County Teachers and Winners in Boys' Corn Club.

often enough to keep down any late fall growth of grass or weeds. Do this very carefully, so there will be no necessity for re-turning the land. The growing wheat plants need all the humus or sponge-like property that can be put into the undersoil to hold the moisture.

It is a serious mistake to neglect the surface cultivation and necessitate turning the land again before seeding, because of the late growth of grass and weeds covering the plowed ground.

If a clover sod cannot be had—and this has of late years been a serious problem with us—the next best preparation is to sow peas in May, cut a crop of hay early in August, allow a second growth from the peavine roots, and turn under deeply about the first of September. Keep the land well surface-cultivated until about the middle of October, keep all the moisture-retaining elements buried, yet have a fine, shallow, well cultivated seed bed.

The wheat plants need a firm subsoil, but one retentive of moisture, and a loose, clean, shallow seed bed. Sow with the drill set to three or four inches deep, and leave the drill furrows well open.

I prefer a disc drill because of the condition in which it leaves the furrow where the seed is placed. Be sure the soil is in good working condition—better too dry than too wet. When the winter freezes come, the loose soil from the sides of the drill furrow will crumble in to protect the roots of the young plant, and it will not raise up nor freeze out near so badly as when harrowed in on a level surface.

Another essential is good seed. It pays well to fan and screen very carefully to get out all the small, weak and faulty grains, as well as the cockle, rye and chess, and sow only plump, heavy, healthy grains of clean wheat. If sown the last half of October, in this section, one bushel per acre of good, clean wheat is better than heavier seeding. Later than this requires more seed per acre, as it does not have the time to tiller out.

To prevent smut it is a safe plan to treat the seed wheat with a strong solution of bluestone or formaldehyde, either of which kills the spores of smut on the wheat, and is a sure preventive; and if sprinkled on the grain so as to thoroughly wet it one day ahead of the drill, it will not hinder the sowing.

When there is a constant freezing and thawing in February and March, lifting the wheat roots out of the ground, the stand can be saved by the use of the roller as soon as the ground is drying out.

In harvesting, it is best to begin while the grain is a little green in places, rather than wait until it is fully ripe. The grain will not shatter so badly, yet it will fully mature from the sap in the rather green stalk.

My experience with commercial fertilizer has been limited, and not satisfactory. The nitrogen and humus from the decaying clover or pea sod, together with the natural phosphate in our Middle Tennessee soil, with a supply of potash stored in our red clay subsoil, and made available by the deep-rooted clover and pea plants, and the deep breaking of our lands, makes it unnecessary for us to use commercial fertilizers on our wheat crops. By careful preparation of the soil and selection of seed, our farmers can very materially increase the wheat yield, and nothing will pay them better than to bring this into their regular rotation.

YOUNG MEN, STAY ON THE FARM.

I would like to talk to the young men on the farm this week who are making up their minds as to their vocation in life. Those who have grown up on farms owned by modern progressive farmers in the majority of cases will select farming as a vocation, for they have learned something of the great possibilities of farming when followed with intelligence and energy, and they have seen some of the attractive features of farming. But to the boy raised in the country who has seen only the drudgery side of farm life, who had to get up at four in the morning, work until breakfast feeding or cutting wood; drudge all day and well into the night; no time for pleasure, living on a farm where no thought was given to making the home and grounds attractive; where it was always work and drudge; no books, no flowers, no music, no pleasant company; no wonder a boy would want to get away from such surroundings. The most hopeful thing about the boy is that he means to get away, and my dear boy you are the one I want to talk to, because there is a movement to take those conditions away from the farm. A movement that will be better for you, than for you to give up farm life, because if you do, you go among conditions unfamiliar to you and the chances are into a form of slavery worse than that you are trying to escape, for vice is less in evidence on the farm among farmers than anywhere men labor.

If you were to leave the farm you might succeed. Thousands have gone from the farm to the city and taken the lead. While that is true, many more have drifted into crime or have been swallowed up in the army of men who live in squalid surroundings and have a struggle for existence. I wish you young men who are undecided about your vocation could interview the successful business men and ask them what they most desired and let them tell you how they yearn for the country and for the farm. They know that the farm can be provided with more

comforts than the city home, but young man remember that it takes money to provide comforts and conveniences either in the city or in the country home. We are not going to find any place where we get them without effort. We have our own living to make just as those ahead of us have made theirs, by their own efforts. We want to find the best way. The boy raised on the farm has naturally learned many practical things about farming. Everyone who knows anything about the tendency of the times knows that agriculture is a vocation and agricultural education is commanding especial attention. People are just waking up to the possibilities for profit from agriculture when intelligently followed. The demand for intelligent farmers is growing, and the prices for their services is good and will be better. With the same intelligence and educational advantages the young man taking up scientific agriculture finds a better field for success than any other vocation today. Most of the others are crowded with incompetents. In agriculture the demand far exceeds the available men. Thoroughness and dependability mean the same in agriculture as in other vocations. There is the added advantage in the country over the city of latitude and freedom. In the city we are restricted, in the country not so much so; we have pure air. We can grow and develop mentally, morally and physically.

I think the farmer boy before he decides to leave the farm and change his vocation should acquaint himself with what is being done to stimulate agriculture and agricultural education; what is being done to improve rural life conditions. If he will, he will be slow to leave a vocation that is coming rapidly into popular favor and guarantees more to those who engage in it of those things that make life worth living.

BOOK FARMING.

I want to talk this week to the farmer who is either indifferent or antagonistic to what he has styled book farming. I want us to get right down to our own experience and forget for the time that any books have been written on this subject. We will not go outside our own experience to prove the value of the things I want you to do, and I will not ask you to begin with more equipment than should be found on every farm in the State of Tennessee.

Every farmer when he gathers his crop would like to have 50 instead of 25 bushels per acre. It requires less work to prepare, cultivate and gather a crop on 10 acres than on 20 acres. Now I want to ask you farmers if you do not always make a better crop when you have sufficient rain than when you have a drouth? You have the same

land but it produces better when you have the right amount of moisture.

Now did it ever occur to you that you could regulate that matter so that you can have enough moisture for your crop even though it does not rain during the growing season? The reason you do not have enough now is because your soil is not broken deep enough to hold it. You have been breaking your soil about four inches deep and below that is a hardpan that water will not penetrate, so when the rains come the thin coat of soil gets so full of water that it washes easy, and when dry weather comes it soon dries out until there is not sufficient moisture to keep your crop growing if it does not rain often and you make very little crop. Another thing you know that nine out of every ten farmers do; that is to take all of the crop off of the ground, and in many cases even rake up and burn the grass and cornstalks. You ask what good will they do. I will tell you. In most cases you find your land inclined to break up cloddy, and the longer you work it, year after year, you find it more that way. I want to ask you if you ever find rich new ground that way? No, because it is so full of vegetable matter the soil is loose and porous; it will hold a great deal more water than your tight land; it will hold more than double the water for the same number of inches of soil. Now if you want to put your ground in condition so it will not suffer for rain, you must fix it so it will hold moisture and enough of it to supply your crop while it is growing. A pint cup will not hold as much as a quart cup, and ground plowed four inches deep will not hold as much as ground pulverized eight inches deep, and tight cloddy land will not hold as much as loose loamy land, so if you want the moisture, instead of plowing four inches deep, let your plow down eight inches deep. To make your land loose, never burn anything, turn under all the vegetable matter, the more of it the better. Now when you get your land broke deep and the vegetable matter it will keep the water from running off, and you can keep the sun from pulling it out if you will stir the surface thorough and often, not deep, but thorough and often. Do your deep plowing before you plant, after you plant work the surface often as it should be and your crop will grow right on if it don't rain, because you have the moisture in the ground and it is doing its work.

I have explained to you before that in every 100 pounds of green crops only about three pounds came from the mineral plant food in the ground, the rest came from the air and water. You do not have to bother about the air further than to give it a chance to get into the ground, and we have shown you how you can have an abundance of water. We have not asked you to use anything but what should

be on every farm. Of course it is going to take more work on an acre to fix it right than to half prepare it, but it is work that will pay you better than the work has paid that you have been doing, and at the same time it is making your land better every year. You are getting the use of plant food that the way you have been working it has been locked up.

Now, I do not ask you to break all the land on a big farm deep and add the vegetable matter to it all at once, but for your own sake I do want you to try, say 10 acres, the way I have suggested and see the result. You are entitled to the comforts of life, if you are willing to work for them. I want your work to bring its true reward, and it will if you work intelligently.

The suggestions I have made are simple enough for any man to follow, and the reward will certainly justify the effort on your part.

If the farmers of Tennessee would do the things suggested in this talk, plow twice as deep in preparing the land for crops, turn under vegetable matter to loosen the soil, select the right kind of seed, cultivate shallow but thorough and often, their crops would be double what they now are. Then if they would keep a cover crop of rye and crimson clover on their land in winter, to keep the land from washing and to turn under in the spring, their farms would become more fertile each year.

The exercise of good common sense is the best fertilizer and the best book on farming ever written. Let's use it freely. It is hard for a farmer to understand all at once all that has been discovered by our scientists concerning improved methods in farming, but there is much that he can understand and prove its value from his own experience. No one has been able to grasp at once what it has taken years of patient toil to work out, and prove. Do not try to do it all at once, but do not throw the whole proposition up because you do not understand it all, but I do want you to take up such propositions as you can grasp and put them in practice. I often talk to farmers about some of the practical things they can do to improve their lands and crops, and they agree that it is right and would be of value, but they had gotten in the habit of the old way. Now are you doing yourself and those dependent upon you justice to continue a system that is depriving you and them of the comforts and advantages you could provide?

At least let's do what we can and every step we take will make the next one easier. Let us do our best.

CONSERVING MOISTURE.

It would not be out of place to talk this week about conserving

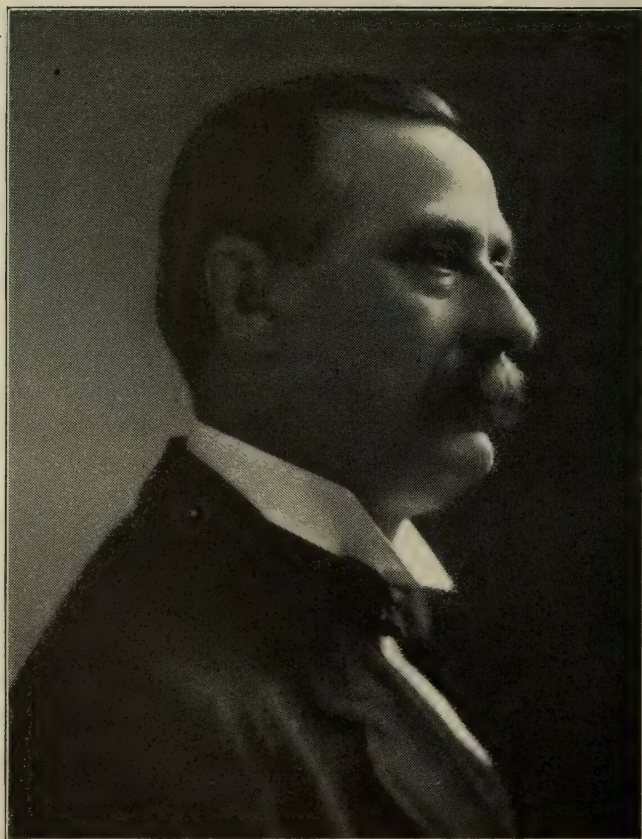
moisture for crops. We can see what happens to our crops when a dry season comes, when we have not prepared our ground to withstand the drouth. We have had this subject up before and warned the farmers in time what would happen when dry weather came if they were not prepared. Now that they can see their corn parching and all the work they have done on the crop, in a measure, wasted, they will possibly give more attention to the suggestions for saving the moisture for such dry seasons as the present.

You remember that we told you that the more decayed vegetable matter you could get into your soil the greater would be its capacity for holding water, and that for the same reason that a quart cup would hold more than a pint cup, so would soil eight inches deep hold more moisture than soil four inches deep.

We have an annual average rainfall of 53 inches, so we have no excuse for not having moisture for our crops. We can always have it if we will simply get busy and prepare our ground to retain the moisture that falls on it. A deep soil full of vegetable matter, well pulverized, will catch and hold the moisture, and evaporation can be minimized by keeping a dust mulch on the surface during the growing season. This has been done often, and the profitable results ought to be sufficiently convincing to cause every one to prepare their land to be independent of the drouths we have during the fall months. It is not want of knowledge with many, but some of us leave work of this character alone altogether because we can not get all our farms in proper shape in one season, while with others they are simply too lazy to put the energy in their work.

Now if we could get every farmer to take five acres on his farm, break it deep and subsoil, get a big crop of vegetable matter to turn under, keep a cover crop of rye and crimson clover for winter and turn under in the spring, grow a crop of soy beans or peas and turn under, then thoroughly pulverize land, provide good seed bed and plant in corn, get a dust mulch by running weeder before corn germinated and keep the mulch by constant shallow stirring, the crop resulting would pay for all the extra work in getting the soil in shape to produce, while the value of the land would be doubled for succeeding crops. Any wide awake farmer who will carry out this plan on a few acres will find the results so profitable that he will add a few acres each year until he has his whole farm improved.

We can secure information if we really want to improve our methods. So many of us are trying to solve technical questions out of our reach. Let's do the simple, practical things first, and by doing so, we will find the mountain easy to climb when we really get to it.



J. J. B. JOHNSONIUS,
Assistant Commissioner of Immigration.

COMMUNITY BREEDING.

Every farmer should be ambitious and broad-minded enough to desire for his own section of country an improvement in its live stock. While to bring this about may be difficult for the individual, it may be easily accomplished by cooperation among the farmers of a community.

No improvement in the dairy herd can be had from the use of the scrub sire, and to most dairymen the price of the pure-bred sire is prohibitive. Here is where the plan of community breeding can be made to help out of the trouble.

It would be hard to overestimate the value resulting from the use of the pure-bred dairy sire. If the sire is responsible for only an additional 40 pounds of butter fat, or 1,000 pounds of milk per cow, the net increase from a herd of 20 cows will be nearly \$200 per year. Thus, if three or four herds are concerned the price of a first-class sire is far more than repaid the first year. The scrub bull will not help the individual in any community to such an extra income. The aim should be at least 300 pounds of butter per cow annually. Why do so many of our dairymen remain content with 200 pounds or only 130 pounds?

A writer in the Pacific Rural Press says on this subject: "Cooperation in this matter should appeal to every dairymen. We all need the help of our fellow-men. It is difficult, tedious and expensive for an individual to build up a name and reputation as a breeder. The organization of several men carries more weight and more power to accomplish an end than the efforts of several men working independently. A permanent organization of dairymen in any district with a fixed resolve to eliminate every scrub bull and to support community breeding will do untold good.

"Cooperative work will assist in arresting and stamping out diseases, will protect all members in purchasing as well as in selling stock, and will quickly bring prosperity to the district. It naturally goes hand in hand with the present excellent cow-testing work, and any creamery can easily be made the center for organization.

"The plan in operation in several sections of the United States is very simple. Farmers may club together in an association and buy three or more pure-bred dairy sires of the same breed and not related. These sires are then placed in different sections of the community, each sire in the care of a competent dairyman, selected by the members of the association. Each sire will be available for the herds of a number of different farmers in which the total number of cows is from 60 to 80. In two years, or when their heifers are old enough to

breed, the sires are exchanged from one section to another. After two years more the sires are exchanged again. If there are three sires in the association they may be used for six years with this system of exchange without any necessity of inbreeding. If there are five sires, ten years. Good bulls will thus be saved from needless sacrifice when too young and before their real value has been determined. The old and well proven sire should be in demand because his progeny will have demonstrated his sterling worth.

"The members of such an association would probably find a monthly meeting very profitable, as it would be well to be seeking not only financial results, but also mental and social improvement, also general enlightenment by discussion of experience and dissemination of pertinent information from all sources. It is an educational enterprise for adults.

"Let us now see briefly what may be cited as objects and results of the proposed associations:

"To encourage the raising of high-grade dairy stock from pure-bred sires.

"To create a demand for and open channels for the sale of surplus stock.

"To make possible the interchange, not slaughter, of good breeding animals for which the owner has no further use.

"To materially assist members in the best methods of feeding and care of stock.

"To induce uniform and efficient methods through the study of the principles of breeding, so that animals of greater value will be produced.

"To leave the pure-bred business in the hands of private individuals, thus retaining in action the full power of private incentive.

"To help dairy farmers to cooperate on a practical basis while retaining their individuality, rather than becoming servants to corporations.

"To give to numerous localities stock and animals which will give them, besides fame and pride in local affairs, large profits from the sale of high-class animals.

"To give to every member who is selling cream or milk additional handsome profits from the increased production of milk and butter-fat.

"To give the show, the sale ring, the advertising journal and the private sale an added dignity and power for advancing the live stock interests of our great State.

"Dairymen who will cooperate in this way will receive the greatest compensation for their efforts, and will quickly bring the greatest development to dairying."

TENNESSEE FERTILIZER LAW.

CHAPTER 417.—HOUSE BILL No. 390.

A BILL to be entitled "An Act to regulate the registration, sale, inspection, and analysis of commercial fertilizers, acid phosphates, fertilizer materials and chemicals in the State of Tennessee, and to consolidate all the laws relating to said sales, inspection, and analysis, and to repeal all other laws or parts of laws in conflict therewith."

SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee*, That all manufacturers, jobbers, and manipulators of commercial fertilizers, and fertilizer material to be used in the manufacture of the same, who may desire to sell or offer for sale in the State of Tennessee such commercial fertilizers and fertilizer materials, shall first file with the Commissioner of Agriculture of the State of Tennessee, upon forms furnished by said Commissioner, the name of each brand of commercial fertilizer, acid phosphate, fertilizer material or chemical which they may desire to sell in said State, either by themselves or their agents, together with the name and address of the manufacturer or manipulator, also the guaranteed analysis thereof, stating the sources from which the phosphoric acid, nitrogen and potash are derived; and if the same commercial fertilizer is sold under a different name or names, said facts shall be stated, and the different brands which are identical shall be named.

SEC. 2. All persons, companies, manufacturers, dealers, or agents, before selling or offering for sale in this State any commercial fertilizer or fertilizer material, shall brand or attach to each bag, barrel, or package the name and address of the manufacturer, and the guaranteed analysis of the commercial fertilizer, giving the valuable constituents of the commercial fertilizer in minimum percentages only. Only these items shall be branded, or printed, on the package in the following order:

- 1 Weight of each package in pounds.
2. Brand name or trade mark.
3. Guaranteed analysis.
4. Available phosphoric acid—per cent.
5. Nitrogen—per cent.
6. Potash—per cent.
7. Name and address of the manufacturer.

In the bone meal, tankage, or other products where the phosphoric acid is not available to laboratory methods, but becomes available on the decomposition of the product in the soil, the phosphoric acid shall

be claimed as total phosphoric acid, unless it be desired to claim available phosphoric acid also, in which latter case the guarantee must take the form above set forth. In the case of bone meal and tankage, manufacturers may brand on these bags information showing the fineness of the product, provided it takes a form approved by the Commissioner of Agriculture.

SEC. 3. If any commercial fertilizer or fertilizer material offered for sale in the State shall, upon official analysis, prove deficient in any of its ingredients as guaranteed and branded upon the sacks or packages, and if by reason of such deficiency the commercial value thereof shall fall 3 per cent below the guaranteed total commercial value of such commercial fertilizer or fertilizer material, then any note or obligation given in payment thereof shall be collectible by law only for the amount of the actual total commercial value as ascertained by such official analysis. Whenever the Commissioner of Agriculture shall be satisfied that any commercial fertilizer is essentially below the guaranteed value in plant food, it shall be his duty to assess said deficiency against the manufacturer of the commercial fertilizer and require that the value of the deficiency be made good to all persons who, in the opinion of the Commissioner, have purchased the said low grade commercial fertilizer; and the Commissioner may seize any commercial fertilizer belonging to the said company, if the deficiency shall not be paid within thirty days after notice to the company. If the Commissioner shall be satisfied that the deficiency in plant food was due to the intention or fraud of the manufacturer, then the Commissioner shall assess and collect from the manufacturer twice the amount of the deficiency and pay over the same to the parties who purchased said commercial fertilizers; that if any manufacturer shall resist such collection or payment, the Commissioner shall immediately publish the analysis and the facts in the Bulletin and in such newspapers in the State as he may deem necessary.

SEC. 4. *Be it further enacted*, That the words "high grade" shall not appear upon any bag or other package of any complete commercial fertilizer, which complete fertilizer contains, by its guaranteed analysis, less than 10 per cent of available phosphoric acid, 1.65 per cent of nitrogen (equivalent to 2 per cent ammonia), and 2 per cent of potash, or a grade or analysis of equal total commercial value; that the word "standard" shall not appear upon any bag or other package of any complete commercial fertilizer which contains, by its guaranteed analysis, less than 8 per cent of available phosphoric acid, 1.65 per cent of nitrogen (equivalent to 2 per cent ammonia), and 2 per cent of potash, or a grade or analysis of equal total commercial value; that the words

"highgrade" shall not appear upon any bag or other package of any acid phosphate with potash which shall contain, by its guaranteed analysis, less than 13 per cent of available phosphoric acid and 1 per cent of potash, or a grade or analysis of equal total commercial value; that the word "standard" shall not appear upon any bag or other package of any acid phosphate with potash which shall contain, by its guaranteed analysis, less than 11 per cent of available phosphoric acid and 1 per cent of potash, or a grade or analysis of equal total commercial value; that the words "high grade" shall not appear upon any bag or other package of any plain acid phosphate which shall contain, by its guaranteed analysis, less than 14 per cent of available phosphoric acid; and, lastly, that the word "standard" shall not appear upon any bag or other package of any plain acid phosphate which shall contain, by its guaranteed analysis, less than 12 per cent of available phosphoric acid.

It is further hereby provided that no complete fertilizer, acid phosphate with potash, acid phosphate with nitrogen, or plain acid phosphate, shall be offered for sale in this State which contains less than 12 per cent of total plant food, namely, available phosphoric acid; nitrogen, and potash, either singly or in combination; provided, that in mixed commercial fertilizers there shall not be claimed less than 1 per cent of potash and 0.32 per cent of nitrogen when one or both are present in the same mixture.

SEC. 5. *Be it further enacted*, That all manufacturers and manipulators, or agents representing them, who have registered their brands in compliance with Section 1 of this Act shall forward to the Commissioner of Agriculture a request for tax tags, stating that said tags are to be used upon brands of commercial fertilizers and fertilizer materials registered in accordance with this Act, and said request shall be accompanied with the sum of 50 cents per ton as an inspection fee; whereupon it shall be the duty of the Commissioner of Agriculture to issue tags to parties applying, who shall attach a tag to each bag, barrel or package thereof, which, when attached to said package, shall be *prima facie* evidence that the seller has complied with the requirements of this Act. Any tags left in the possession of the manufacturers shall not be used for another season, but shall be redeemed with new tags within sixty days after the close of the Department's fiscal year, which fiscal year shall be comprised between the dates of March 1, inclusive. The color of said tags must be changed each fiscal year, and there shall not be printed upon said tags any brand name or analysis.

(The following amendment of the fertilizer law of Tennessee was passed by the General Assembly of 1907:

CHAPTER 597.—SENATE BILL NO. 668.

AN ACT to be entitled "An Act to amend an Act to regulate the registration, sale, inspection, and analysis of commercial fertilizers, acid phosphate, fertilizer material and chemicals in the State of Tennessee," said Act to be amended being House Bill No. 390 of the Acts of 1903, approved April 15, 1903.

SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee*, That in Section 5 of said Act the words "March 1, inclusive," be stricken out, and the words "June 1, inclusive," be inserted.

SEC. 2. *Be it further enacted*, That this Act take effect from and after June 1, 1908, the public welfare requiring it.

Passed April 15, 1907.

E. G. TOLLETT,

Speaker of the Senate.

JOHN T. CUNNINGHAM, JR.,

Speaker of the House of Representatives.

Approved April 15, 1907.

MALCOLM R. PATTERSON,

Governor.)

SEC. 6. *Be it further enacted*, That it shall not be lawful for any manufacturer or company, either by themselves or their agents, to sell or offer for sale in this State any commercial fertilizer or fertilizer material that has not been registered with the Commissioner of Agriculture as required by this Act. The fact that the purchaser waives the inspection and analysis thereof shall be no protection to said party selling or offering the same for sale.

SEC. 7. The guaranteed analysis of each and every brand of commercial fertilizer or fertilizer material must, without exception, remain uniform throughout the fiscal year for which it is registered; and in no case, even at subsequent registration, shall the grade be lowered, although the proportion of available constituents may be changed so that the increase of one constituent may be compensated for in value by the increase of the other or others. Such proposed change must first receive the approval of the Commissioner of Agriculture.

A brand name or (and) trade-mark registered by one manufacturer shall not be entitled to registry by another, and the manufacturer having first registered and used the same brand name or (and) trade-mark shall be entitled to it, even should said brand name or (and) trade-mark not be offered for current registration at the time—nothing in

this section to be construed as debarring the right of any manufacturer to establish his ownership in, and prior right of registration of, any brand name or (and) trade-mark, whether said brand name or (and) trade-mark had been previously registered or not.

SEC. 8. No person, company, dealer, or agent shall sell, expose, or offer for sale in this State, any pulverized leather—raw, steamed, roasted, or in any other form—either as a commercial fertilizer or fertilizer material, without first making full, explicit statement of the facts in registration with the Commissioner of Agriculture and furnishing satisfactory proof that the nitrogen is sufficiently available and valuable for the purpose for which it is sold.

SEC. 9. *Be it further enacted*, That the Commissioner of Agriculture shall appoint not to exceed three inspectors of commercial fertilizers, who shall hold their offices for such time as said Commissioner, in his judgment, shall think best for carrying on the provisions of this Act. The greatest compensation which any one inspector of commercial fertilizers shall receive shall be at the rate of \$83.33 per month and his actual expenses while in the discharge of his duty as such inspector. It shall be his duty to inspect all commercial fertilizers, acid phosphates, chemicals, cotton seed meal, or other fertilizing material that may be found at any point within the limits of the State, and to go to any point when so directed by the Commissioner of Agriculture; and he shall see that all commercial fertilizers and fertilizer materials are properly tagged.

SEC. 10. *Be it further enacted*, That each of the inspectors of commercial fertilizers shall be provided with bottles of not less than eight (8) ounce capacity in which to place samples of commercial fertilizers and fertilizer materials drawn by him, and it shall be the duty of each inspector of commercial fertilizers to draw with such an instrument as shall secure a core from the entire length of the sack of commercial fertilizers and fertilizer materials, as he may be directed by the Commissioner of Agriculture to inspect or that he may find uninspected, and in the performance of his duty he shall carefully draw samples as follows:

In lots of ten packages or less, from every package; in lots of from ten to one hundred packages, from not less than ten packages; in lots of one hundred packages and over, from not less than 10 per cent of the entire number. And after thoroughly mixing the samples, as drawn, he shall, by the method known as "quartering," draw from such thoroughly mixed samples two sub-samples, and with them fill two sample bottles, and shall plainly write on a label on said bottles the

number of said samples, and shall also write on the label on one only of said bottles the name of the commercial fertilizer, acid phosphate, or other fertilizer material, also the name of the manufacturer. He shall then seal both of said bottles, and shall forward to the Commissioner of Agriculture the said samples so drawn by him, stating the number of sacks from which the samples were drawn, and a full report of the inspection written on a form prescribed by the Commissioner of Agriculture, which report must be numbered to agree with the number on the bottles; and in said report shall be given the name of the commercial fertilizer or fertilizer material, the name of the manufacturer, the guaranteed analysis, the place where inspected, the date of the inspection, and the name of the inspector; and it shall be the duty of said inspectors to keep a complete record of all inspections made by them on forms prescribed by the Commissioner. Before entering upon the discharge of their duties they shall also take and subscribe before some officer authorized to administer the same on oath to faithfully discharge all the duties which may be required of them in pursuance of this Act.

Any person not a dealer in, or agent for the sale of, any commercial fertilizer who may purchase any commercial fertilizer in this State for his own use, and not for sale, may take a sample of the same for analysis, which analysis shall be made by the Department of Agriculture free of charge. Such samples for free analysis shall be taken by the purchaser in the presence of the person, company, or agent selling the commercial fertilizer, from at least 10 per cent of the sacks or other packages comprising the whole lot purchased, and shall be thoroughly mixed; and at least one pound of the material, after mixing, must be put into a jar or can, securely sealed, and marked in such a way as to surely identify the sample and show by whom it was sent, without giving the name of the commercial fertilizer or the person from whom it was purchased, and must be forwarded to the Commissioner of Agriculture. The purchaser shall also send with the sample a certificate signed by himself and witness, or by two witnesses, stating that the sender has purchased the commercial fertilizer for his own use, and not for sale, and that the sample was taken in the manner prescribed in this section; provided, however, that if the person, company, or agent shall refuse to witness the taking of the sample, then the sample may be taken at the time of the purchase in the manner already prescribed, in the presence of two witnesses, who shall certify to the manner of taking the sample. The purchaser shall preserve the official label from one of the bags or other packages sampled, to be sent to the Commissioner after having

received the report of the analysis of the sample, and at the same time he shall furnish to the Commissioner the name and address of the firm of whom the commercial fertilizer was purchased and the amount purchased; and any person having sent a sample for free analysis, under the provisions of this section, who shall, after having received the report of the analysis of same, refuse to furnish the required information, shall thereafter forfeit the privilege of free analysis of commercial fertilizers under this section; but if any sample shall have been submitted for free analysis, without all the requirements of this section having been complied with, the Commissioner shall inquire into the case, and may accept sample for free analysis, if he believes that it is a fair sample of the commercial fertilizer as it was delivered to the purchaser.

SEC. 11. *Be it further enacted*, That a sample of all commercial fertilizers or fertilizer materials, drawn by the official inspectors and filed with the Commissioner of Agriculture, shall be marked by number and delivered by said Commissioner to the director of the Experiment Station, who shall make a complete analysis of the same and certify under the same number as marked, said analysis to said Commissioner, which shall be recorded as official and entered opposite the brand of commercial fertilizer or fertilizer material which the mark and number represent; and only the said official analysis of such commercial fertilizer or fertilizer material which the mark and number represent, and only the said official analysis of such fertilizer or fertilizer material, under the seal of the Commissioner of Agriculture, shall be admissible as evidence in any of the courts of this State on the trial of any issue involving the merits of such commercial fertilizer or fertilizer material.

SEC. 12. *Be it further enacted*, That the Commissioner of Agriculture shall have authority to establish such rules and regulations in regard to the inspection, analysis, and sale of commercial fertilizer and fertilizer materials as shall not be inconsistent with the provisions of this Act, and as in his judgment will best carry out the requirements thereof.

SEC. 13. *Be it further enacted*, That nothing in this Act shall be construed to restrict or avoid sales of acid phosphate or any other fertilizer material to each other by importers, manufacturers, or manipulators who mix fertilizer materials for sale, or as preventing the free and unrestricted shipments of material to manufacturers or manipulators who have registered their brands as required by the provisions of this Act.

SEC. 14. The Commissioner shall annually analyze, or cause to be analyzed, at least one sample of every commercial fertilizer sold or offered for sale under the provisions of this Act; and he shall publish in one or more bulletins the analyses made during the year, together with relative commercial value of each commercial fertilizer computed from its analysis, as he may determine, and the analysis guaranteed by the manufacturer. It shall be the duty of the Commissioner of Agriculture to ascertain as near as may be the actual cost of blood, tankage, fish scrap, nitrate of soda, cotton seed meal, and other materials from which ammonia or nitrogen is obtained; the cost of all phosphate rock, together with a description of the treatment with acids, the grinding and general manufacture of acid phosphate, and the actual cost thereof as near as may be; and to communicate with dealers both in this country and in Germany as to the cost of muriate of potash, kainit, and other sources of potash, and to publish the same in a bulletin. But he shall not expose to the public the name of any manufacturer in this State who may give him information on this subject, nor shall he divulge any information concerning the private business of any corporation or company manufacturing commercial fertilizers solely in this State; provided, such corporation or company is not a part or branch of any trust or combination. Said Commissioner of Agriculture shall also make and publish in every fertilizer bulletin a price list of the market value of all the materials of which commercial fertilizers are made, and revise the same as often as may be necessary. Said bulletin shall be furnished free to any manufacturer of or dealer in commercial fertilizer or fertilizer material sold within this State, and to any consumer of commercial fertilizer or fertilizer material within the State who may apply for same.

SEC. 15. *Be it further enacted*, That any person selling or offering for sale any commercial fertilizer or fertilizer material without first having complied with the provisions of this Act shall be guilty of a misdemeanor, and, on conviction thereof, shall be fined not less than \$50 nor more than \$500.

SEC. 16. To facilitate inspection of commercial fertilizers, the Commissioner of Agriculture is authorized to require all manufacturers making shipments into or within the State to notify him of the kinds, amounts, dates, destinations, and consignees of all such shipments.

SEC. 17. It is hereby made a part of the duty of the director of the Tennessee Experiment Station to annually analyze, or cause to be analyzed, all samples of commercial fertilizers or fertilizer materials

forwarded to him by the Commissioner of Agriculture at a uniform rate of \$5 per sample, and to further assist and coöperate with the Commissioner of Agriculture in making such practical tests of the relative value of the different commercial fertilizers offered for sale on the type soils of the State as in his judgment may be advisable.

For the purpose of carrying out this work, the Commissioner is hereby authorized to spend a sum not to exceed \$600 per annum.

The results of these investigations are to be prepared and submitted in the form of a bulletin to the Commissioner of Agriculture, who shall annually cause them to be published as a part of the bulletin giving the analysis of the commercial fertilizers and fertilizer materials examined during the fiscal year.

SEC. 18. *Be it further enacted*, That, by the authority aforesaid, all laws and parts of laws in conflict with this Act be and the same are hereby repealed, and that this Act take effect from and after the first day of June, 1903, the public welfare requiring it.

Passed April 9, 1903.

L. D. TYSON,

Speaker of the House of Representatives.

ED. T. SEAY,

Speaker of the Senate.

Approved April 15, 1903.

JAMES B. FRAZIER,

Governor.

TENNESSEE FEED CONTROL LAW.

CHAPTER 434.

HOUSE BILL NO. 495.

AN ACT to regulate the sale of concentrated commercial feeding stuffs; to define concentrated commercial feeding stuffs; to prohibit the adulteration of concentrated commercial feeding stuffs; to provide for the correct weighing and marketing, for making analyses and collecting samples of concentrated commercial feeding stuffs; to prescribe penalties for the violation of this Act; to vest the execution and enforcement of this Act in the Commissioner of Agriculture, and authorize him to prescribe rules and regulations therefor, and to repeal Chapter 465 of the Acts of the General Assembly of the State of Tennessee for the year 1907, being an Act entitled "An Act to regulate the sale of concentrated commercial feeding stuffs and the materials from which they are manufactured; to define concentrated commercial feeding stuffs; to prohibit the adulteration of commercial feeding stuffs; to provide for the correct weighing and marketing, for making analyses and collecting samples of commercial feeding stuffs; to prescribe penalties for the violation of this Act, and vesting the execution and enforcement of this Act in the Commissioner of Agriculture."

SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee*, That every lot or parcel of concentrated commercial feeding stuff sold, offered, or exposed for sale within this State shall have affixed thereto, or printed thereon in a conspicuous place on the outside thereof, a legible and plainly printed statement, in the English language, clearly and truly certifying the weight of the package (provided that all concentrated commercial feeding stuffs shall be in standard weight bags or packages of 5, 10, 25, 50, 75, 100, 125, 150, 175 or 200 pounds); the name, brand or trade-mark under which the article is sold; the name and address of the manufacturer, jobber or importer; the names of each and all ingredients of which the article is composed; a statement of the maximum percentage it contains of crude fiber, and the percentage of crude fat, and the percentage of crude protein, and the percentage of carbohydrates, allowing 1 per cent of nitrogen to equal $6\frac{1}{4}$ per cent of protein; all four constituents to be determined by the methods in use at the time by the Association of Official Agricultural Chemists of the United States.

SEC. 2. *Be it further enacted*, That the term "Concentrated Com-

mercial Feeding Stuffs" shall be held to include all feeds used for live stock and poultry, except whole hays, straws and corn stover when the same are not mixed with other materials; nor shall it apply to the unmixed whole seeds or grains of cereals when not mixed with other materials.

SEC. 3. *Be it further enacted*, That each and every manufacturer, importer, jobber, agent, or seller, before selling, offering or exposing for sale in this State any concentrated commercial feeding stuffs, shall, for each and every feeding stuff bearing a distinguishing name or trademark, file for registration with the Commissioner of Agriculture a copy of the statement required in Section 1 of this Act, and accompany said statement, on request, by a sealed glass jar or bottle containing at least one pound of such feeding stuff to be sold, exposed or offered for sale, which sample shall correspond within reasonable limits to the feeding stuff which it represents in the percentage of crude protein, crude fat, crude fiber and carbohydrates which it contains.

SEC. 4. *Be it further enacted*, That whenever a manufacturer, importer or jobber of any concentrated commercial feeding stuffs shall have filed a statement, as required by Section 3 of this Act, no agent or seller of such manufacturer, importer or jobber shall be required to file such statement.

SEC. 5. *Be it further enacted*, That the Commissioner of Agriculture shall have the power to refuse the registration of any concentrated commercial feeding stuff under a name which would be misleading as to the materials of which it is composed, or when the names of each and all ingredients of which it is composed are not stated. Should any concentrated commercial feeding stuffs be registered and it is afterwards discovered that they are in violation of any of the provisions of this Act, the Commissioner of Agriculture shall have the power to cancel such registration.

SEC. 6. *Be it further enacted*, That each and every manufacturer, importer, jobber, agent or seller of any concentrated commercial feeding stuff, as defined in Section 2 of this Act, shall pay to the Commissioner of Agriculture an inspection tax of 20 cents per ton for each ton of such commercial feeding stuff sold, offered or exposed for sale or distributed in this State, and shall affix to or accompany each car shipped in bulk and to each bag, barrel or other package of such concentrated commercial feeding stuff a stamp, to be furnished by the Commissioner of Agriculture, stating that all charges specified in this

section have been paid; provided, that the inspection fee herein provided shall not apply to unadulterated wheat, corn, rye and buckwheat bran; nor to unadulterated wheat, corn, rye and buckwheat middlings; nor to unadulterated wheat, corn, rye and buckwheat shorts; and provided, whenever any concentrated commercial feeding stuff, as defined in Section 2, is kept for sale in bulk, stored in bins or otherwise, the manufacturer, dealer, jobber or importer keeping the same for sale shall keep on hand cards of proper size upon which the statement or statements in Section 1 is or are plainly printed; and if the feeding stuff is sold at retail in bulk, or if it is put up in packages belonging to the purchaser, the manufacturer, dealer, jobber or importer shall furnish the purchaser with one of said cards upon which is or are printed the statement or statements described in this section, together with sufficient tax to cover same; provided, that the inspection tax of 20 cents per ton shall not apply to whole seeds and grains when not mixed with other whole seeds or materials. It is further provided that, upon demand, said inspection stamps shall be redeemed by the department issuing said stamps upon surrender of same, accompanied by an affidavit that the same have not been used; provided, that nothing in this Act shall be construed to restrict or prohibit the sale of concentrated commercial feeding stuff in bulk to each other by importers, manufacturers or manipulators who mix concentrated commercial feeding stuff for sale; but importers, manufacturers and manipulators shall attach to such feeding stuff a tag stating that it is to be used for mixing purposes only, and this tag shall give the number of pounds in bulk or package, the name of the manufacturer, the name of the stuff and its analysis, showing crude protein, crude fat, crude fiber and carbohydrates; and a duplicate of said tag shall be sent to the Commissioner of Agriculture, together with a request for inspection. The Commissioner of Agriculture is hereby empowered to prescribe the form of such tax stamps.

SEC. 7. *Be it further enacted*, That any manufacturer, importer, jobber, agent or dealer who shall sell, offer or expose for sale or distribution in this State any concentrated commercial feeding stuff as defined in Section 2 of this Act, without complying with the requirements of the preceding sections of this Act, or who shall sell or offer or expose for sale or distribution any concentrated commercial feeding stuffs which contain substantially a smaller percentage of crude protein, or crude fat, or carbohydrates, or a larger percentage of crude fiber than certified to be contained, or who shall mix or adulterate any concentrated commercial feeding stuff with foreign, mineral or other substance or substances, such as rice chaff or hulls, peanut

shells, ground or crushed corn cobs, oat hulls or similar materials of little or no feeding value, or with substances injurious to the health of domestic animals, or who shall sell, offer or expose for sale any concentrated commercial feeding stuffs so mixed or adulterated, shall be guilty of a violation of this Act, and the lot of feeding stuffs in question shall be seized and condemned, sold or destroyed by the Commissioner of Agriculture or his duly authorized representative, and the proceeds from said sales shall be converted into the State treasury for the use of the department executing the provisions of this Act. Such seizure and sale shall be made by the Commissioner of Agriculture, or under the direction of an officer of his appointment. The sale shall be made at the courthouse door in the county in which the seizure is made; provided, that whenever, for sufficient reasons appearing to the Commissioner of Agriculture or his representative aforesaid, another place of sale is more convenient and more desirable, such place of sale may be selected. The sale shall be advertised for thirty days in a newspaper published in the county in which the seizure is made, or, if no newspaper be published in such county, then it shall be advertised in a newspaper published in the nearest county thereto having a newspaper. The advertisement shall state the brand or name of the goods, the quantity, and why seized and offered for sale, and must show the time and place of sale. The Commissioner of Agriculture, however, may, in his discretion, release the feeding stuffs so withdrawn when the requirements of the provisions of this Act have been complied with, and upon the payment of all the costs or expenses incurred in any proceeding connected with such seizure and withdrawal.

SEC. 8. *Be it further enacted*, That it shall be unlawful and shall be punished as other violations of this Act to sell, offer or expose for sale any mixed or compounded commercial feeding stuff containing as an ingredient crushed or ground ear corn; provided, that nothing herein shall prevent the sale of crushed or ground ear corn by itself, and not mixed with any other substance, but the crushed or ground ear corn, when sold by itself, is a concentrated commercial feeding stuff defined in Section 2 of this Act, and the sale thereof within this State shall be governed by the provisions of this Act and the rules and regulations prescribed by the Commissioner of Agriculture.

SEC. 9. *Be it further enacted*, That if at any time the Commissioner of Agriculture, or his duly authorized representative, shall have reason to believe that any feeding stuff offered or exposed for sale in this State does not comply with the requirements of this Act as to the

ingredients or substances of the same, it shall be his duty, by written order, to suspend the sale of the same until he shall have satisfied himself, or shall be satisfied by an analysis or otherwise, that such feeding stuff is made up or compounded as required by this Act. If he shall find that the same does not comply with this Act, then he is authorized to proceed with regard to the same as provided in Section 7 of this Act.

SEC. 10. *Be it further enacted*, That the Commissioner of Agriculture, together with his deputies, agents and assistants, shall have free access to all places of business, mills, buildings, vehicles, cars, vessels and packages, of whatsoever kind, used in the manufacture, importation or sale of any concentrated commercial feeding stuff, and shall have power and authority to open any package containing or supposed to contain any concentrated commercial feeding stuff; and upon tender and full payment of the selling price of said samples, take therefrom, in the manner hereinafter prescribed, samples for analysis; and he shall annually cause to be analyzed at least one sample so taken of every concentrated commercial feeding stuff that is found, sold or offered or exposed for sale in this State under the provisions of this Act. Said samples, not less than one pound in weight, shall be taken from not less than ten bags or packages, or, if there be less than ten bags or packages, then the samples shall be taken from each bag or package, if it be in bag or package form; or, if such feeding stuff be in bulk, then it shall be taken from ten different places of the lot. The Commissioner of Agriculture is hereby authorized to publish from time to time, in reports or in bulletins, the results of the analysis of such sample or samples, together with such additional information as circumstances advise; provided, however, that if such sample or samples as analyzed by the Commissioner of Agriculture differs from the statement prescribed in Section 1 of this Act, then, at least thirty days before publishing the results of such analysis, the Commissioner of Agriculture shall give written notice of such results to the manufacturer, importer, agent or jobber of such stock, if the name and address of such manufacturer, jobber or importer be known; provided, further, that if the analysis of any such sample does not differ substantially from the statement prescribed in Section 1 of this Act appearing upon the goods, the manufacturer shall be considered as having complied with the requirements of this Act.

SEC. 11. *Be it further enacted*, That the Commissioner of Agriculture shall from time to time prescribe and publish rules and regulations for carrying out the provisions of this Act.

SEC. 12. *Be it further enacted*, That the Commissioner of Agriculture is authorized to prescribe rules and regulations governing the grading of any and all concentrated commercial feeding stuffs defined in Section 2 of this Act.

SEC. 13. *Be it further enacted*, That any manufacturer, importer, jobber, agent or dealer who shall sell, offer or expose for sale or distribute in this State any concentrated commercial feeding stuffs without having attached thereto or furnished therewith such tax stamps as required by the provisions of this Act, or who shall use the required tax stamps a second time to avoid the payment of the tonnage tax, or any manufacturer, importer, jobber, agent or dealer who shall counterfeit or use a counterfeit of such tax stamps shall be guilty of a violation of the provisions of this Act.

SEC. 14. *Be it further enacted*, That any manufacturer, importer, jobber, agent or dealer who refuses to comply with the requirements of the provisions of this Act, or any manufacturer, importer, jobber, agent or dealer or person who shall impede, obstruct, hinder or otherwise prevent or attempt to prevent any chemist, inspector or other authorized agent in the performance of his duty in connection with the provisions of this Act, shall be guilty of a violation of the provisions of this Act.

SEC. 15. *Be it further enacted*, That any manufacturer, importer, jobber, agent or dealer who shall violate any of the provisions of this Act, or the regulations adopted by the Commissioner of Agriculture, upon conviction thereof, shall be fined not exceeding fifty dollars for the first offense, nor more than two hundred dollars for each subsequent offense, and the proceeds from such fines shall be covered into the State treasury for the use of the department executing the provisions of this Act.

SEC. 16. *Be it further enacted*, That whenever the Commissioner of Agriculture, or his duly authorized representative, becomes cognizant of any violation of the provisions of this Act, he shall immediately notify, in writing, the manufacturer, importer, jobber or dealer, if same be known, and after thirty days he shall notify the District Attorney General, who shall cause proceedings to be commenced against the person or persons so violating the Act, and the same prosecuted in the manner required by law.

SEC. 17. *Be it further enacted*, That in all prosecutions in the courts of this State arising under this Act, and the rules and regulations made in accordance therewith, the certificate of the analyst or

other officer making the analysis or examination, when duly sworn to and subscribed by such analyst or officer, shall be *prima facie* evidence of the facts therein certified.

SEC. 18. *Be it further enacted*, That there is hereby appropriated, for the purpose of enforcing the provisions of this Act, a sum not exceeding the amount of fees and fines collected, and moneys or proceeds derived from the seizure and sale of feeding stuffs under its provisions. Such expense shall be paid by warrant of the State Comptroller, upon bills filed by the Commissioner of Agriculture. All fees collected under the provisions of this Act shall be paid into the State treasury.

SEC. 19. *Be it further enacted*, That the Commissioner of Agriculture shall appoint such analysts, chemists and inspectors as may be required to carry out the provisions of this Act, and any part of the labor of the analysts and chemists, upon request of the Commissioner of Agriculture, shall be performed by the Tennessee Experiment Station, with such compensation therefor as may be approved by the said Commissioner of Agriculture.

SEC. 20. *Be it further enacted*, That all laws and parts of laws in conflict with this Act, including Chapter 465 of the Acts of 1907, the title of which is recited in the caption of this Act, be and the same are hereby repealed.

SEC. 21. *Be it further enacted*, That this Act take effect from and after the first day of June, 1909, the public welfare requiring it.

Passed April 29, 1909.

M. HILLSMAN TAYLOR,
Speaker of the House of Representatives.

WM. KINNEY,
Speaker of the Senate.

Approved May 1, 1909.

MALCOLM R. PATTERSON, *Governor.*

TENNESSEE SEED LAW.

CHAPTER 395.

HOUSE BILL NO. 574.

AN ACT to regulate the sale of agricultural seeds, to provide a standard of purity for such seeds, to prescribe penalties for the violation of this Act, and vesting the execution and enforcement of this Act in the Commissioner of Agriculture.

SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee*, That every parcel, package or lot of agricultural seeds as hereafter defined in this Act, and containing one pound or more, offered or exposed for sale in the State of Tennessee, for use within this State, shall have affixed thereto, in a conspicuous place on the outside thereof, distinctly printed, or plainly written, in the English language, a statement certifying:

First—The name of seed.

Second—Full name and address of the seedman, importer, dealer or agent.

Third—A statement of the purity of the seed contained, specifying the kind and percentage of the impurities as defined in this Act; provided, that said seeds are below the standard fixed in this Act.

Fourth—Locality where said seed was grown, and when grown.

SEC. 2. *Be it further enacted*, That the term agricultural seeds, as used in this Act, shall include the seeds of the red clover, white clover, alsike clover, alfalfa, Kentucky bluegrass, timothy, brome grass, orchard grass, red top, meadow fescue, oat grass, rye grass and other grasses and forage plants, flax, rape and cereals.

SEC. 3. *Be it further enacted*, That no person shall sell, offer or expose for sale or distribution in this State, for the purpose of seedling, any of the agricultural seeds as defined in Section two (2) of this Act, unless the said seeds are free from the seeds of the following weeds: Wild mustard or charlock (*Brassica sinapistrum*), quick grass (*Agropyron repens*), Canada thistle (*Cnicus arvensis*), wild oats (*Avena fatua*), clover and alfalfa fodder (*Cuscuta epithymum*), field fodder (*Cuscuta arvensis*), corn cockle (*Lychnis githago*), sour dock, wild onions, and oxeye daisy.

SEC. 4. *Be it further enacted*, That the seeds of the following weeds shall be considered as impurities in the agricultural seeds as defined in Section two (2) of this Act, sold, offered or exposed for

sale, within the State, for the purpose of seeding: White cockle (*Lychnis vespertina*), night flowering catchfly (*Silene noctiflora*), curled dock (*Rumex crispus*), smooth dock (*Rumex altissimis*), sheep sorrel (*Rumex acetosella*), yellow trefoil (*Medicago lupulina*), burr clover (*Medicago denticula*), sweet clover (*Melilotus alba* and *officinalis*), black mustard (*Brassica nigra*), plantain, buck-horn (*Plantago lanceolata*), bracted plantain (*Plantago aristata*), bindweed (*Convolvulus sepium*), smooth crab grass (*Panicum glabrum*), common chick weed (*Stellaria media*). When such impurities, or any of them, are present in quantity exceeding a total of two per cent of the weight of said agricultural seeds, the approximate percentage of each shall be plainly indicated in statement specified in Section one (1) of this Act.

SEC. 5. *Be it further enacted*, That sand, dirt, chaff and foreign substances and seeds other than those specified in Sections six (6) and seven (7), or broken seed and seed not capable of germinating, shall be considered impurities when present in agricultural seed sold, offered or exposed for sale, in this State, for the purpose of seeding; and when such impurities, or any of them, are present in quantity exceeding the standards of purity and viability authorized in Section nine (9) of this Act, the name and approximate percentage of each shall be plainly indicated in the statement specified in Section one (1) of this Act.

SEC. 6. *Be it further enacted*, That for the purposes of this Act, seeds shall be deemed to be mixed or adulterated—

First—When orchard grass (*Dactylis glomerata*) seed contains ten per cent or more by weight of meadow fescue (*Fescuca elatior patensis*) seed, or Italian rye grass (*Lolium Italicum*) seed, or English rye grass (*Lolium perenne*) seed.

Second—When bluegrass or Kentucky bluegrass (*Poa pratensis*) seed contain five per cent or more by weight of Canada bluegrass (*Poa compressa*) seed, red top chaff, red top (*Agrostis alba*) seed, or any other seed or foreign substance.

Third—When red clover (*Trifolium pratense*), mammoth red clover (*Trifolium pratense* var.), or alfalfa (*Medicago sativa*) contains five per cent or more by weight of yellow trefoil (*Medicago lupulina*), or sweet clover (*Melilotus alba* and *M. officinalis*) seed, or burr clover (*Medicago denticulata*) seed.

Fourth—When rape (*Brassica rapa*) contains five per cent or more of common mustard (*Brassica sinapistrum*), or black mustard (*B. nigra*).

SEC. 7. *Be it further enacted*, That for the purposes of this Act, seed shall be deemed to be misbranded:

First—When meadow fescue (*Festuca elatior pratensis*), English rye grass (*Lolium perenne*), or Italian rye grass (*Lolium Italicum*) is labeled or sold under the name of orchard grass (*Dactylis glomerata*) seed.

Second—When Canadian blue grass (*Poa compressa*) seed, red top (*Agrostis alba*) seed, or any other seed not blue grass seed, is sold under the name of Kentucky blue grass, or blue grass (*Poa pratensis*) seed.

Third—When yellow trefoil (*Medicago lupulina*), burr clover (*Medicago denticula*), or sweet clover (*Melilotus alba*) is sold under the name of clover, June clover, red clover (*Trifolium pratense*), medium red clover, small red clover, mammoth red clover, sapling clover, peavine clover (*T. pratense* var.), or alfalfa (*Medicago sativa*) seed.

Fourth—When the seeds are not true to the name under which they are sold.

SEC. 8. *Be it further enacted*, That the provisions concerning agricultural seeds contained in this Act shall not apply to:

First—Any person or persons growing or selling seeds for food purpose only, or having such seeds in possession for sale for such purpose.

Second—Any person selling seeds direct to merchants to be cleaned or graded before being offered for sale for the purpose of seeding. This shall not, however, exempt the seller from the restrictions of Section three (3) of this Act.

Third—Seed that is held in storage for the purpose of being re-cleaned and which has not been offered, exposed or held in possession of or for sale for the purpose of seeding.

Fourth—Seed marked “not absolutely clean,” and held or sold for export outside of the State only.

Fifth—The sale of seed that is grown, sold and delivered by any farmer on his own premises for seeding by the purchaser himself, unless the purchaser of said seed obtains from the seller at the time of the sale thereof a certificate that the said seed is supplied to the purchaser subject to the provisions of this Act.

Sixth—Mixtures of seed for lawn or pasture purposes. This shall not, however, exempt the seller of such mixtures of seed from the restrictions of Sections three (3) and four (4) of this Act.

SEC. 9. *Be it further enacted*, That the following standards of

purity (meaning freedom from weed seeds or other seeds) and viability are hereby fixed:

STANDARD OF PURITY AND VIABILITY OF AGRICULTURAL SEEDS.

Name of Seeds.	Per Cent of Purity.	Per Cent of Germinable Seed.
Alfalfa (<i>Medicago sativa</i>)	96	80
Barley	98	90
Blue grass, Canadian (<i>Poa compressa</i>).....	90	45
Blue grass, Kentucky (<i>Poa pratensis</i>).....	80	45
Brome, awnless (<i>Bromus inermis</i>)	90	75
Clover, alsike (<i>Trifolium hybridum</i>).....	90	75
Buckwheat	96	90
Clover, crimson (<i>Trifolium incarnatum</i>).....	98	85
Clover, red (<i>Trifolium pratense</i>)	92	80
Clover, white (<i>Trifolium repens</i>)	90	75
Corn, field (<i>Zea mays</i>)	99	94
Corn, sweet	99	75
Fescue, meadow (<i>Festuca pratensis</i>)	95	85
Flax (<i>Linum usitatissimum</i>)	96	89
Millet, common (<i>Setaria Italica</i>)	90	85
Millet, pearl (<i>Pennisetum typhoideum</i>)	99	65
Millet, hog (<i>Panicum miliaceum</i>)	90	85
Oats (<i>Avena sativa</i>)	98	90
Oat grass, tall (<i>Arsnenatherum avenaceum</i>)..	72	70
Orchard grass (<i>Dactylis glomerata</i>)	70	70
Rape (<i>Brassica rapa</i>)	99	90
Red top (<i>Agrotis alba</i>)	90	70
Rye (<i>Secale cereale</i>)	98	90
Rye grass, perennial (<i>Lolium perenne</i>)	96	90
Rye grass, Italian (<i>Lolium Italicum</i>)	95	80
Sorghum (<i>Andrepogon sorghum</i>)	96	80
Sorghum, for fodder	96	60
Timothy (<i>Phleum pratense</i>)	96	85
Wheat (<i>Triticum</i>)	98	90

SEC. 10. *Be it further enacted*, That it is hereby made the duty of the Commissioner of Agriculture to enforce the provisions of this Act. The inspectors, assistants and chemists appointed by the Commissioner of Agriculture shall perform the same duties and have the same authority under this Act as are prescribed by Chapter four hun-

dred and sixty-five (465) of the Acts of the General Assembly of 1907, and the said Commissioner of Agriculture may appoint such analysts and chemists as may be necessary to carry out the provisions of this Act.

SEC. 11. *Be it further enacted*, That whosoever sells, offers or exposes for sale any of the seeds specified in Sections six (6) and seven (7) of this Act, which are mixed, adulterated or misbranded, or any agricultural seeds which do not comply with Sections three (3), four (4) and five (5) of this Act, or who shall counterfeit or use a counterfeit of any of the tags prescribed by this Act; or who shall prevent or attempt to prevent any inspector in the discharge of his duty from collecting samples; or who shall violate any of the provisions of this Act, shall be guilty of a misdemeanor, and, upon conviction, shall be fined not more than one hundred dollars (\$100.00) and costs of prosecution; provided, that no one shall be convicted for violation of the provisions of Section three (3) of this Act if he is able to show that the weed seeds named in Section three (3) are present in quantities not more than one in ten thousand, and that due diligence has been used to find and remove said seeds.

SEC. 12. *Be it further enacted*, That for the purpose of defraying the expenses connected with the inspection and analysis of agricultural seeds, each and every importer, dealer or agent, before selling, offering or exposing for sale in this State any of the agricultural seeds specified in Sections three (3), four (4) and five (5) of this Act, shall pay to the Commissioner of Agriculture an inspection fee of 2 cents per bushel on cereals, and 5 cents per bushel on grasses and clovers; one-half bushel and less of cereals, 1 cent; one-half bushel grasses or clovers, 3 cents; one-fourth bushel and less grasses or clover, 2 cents on every parcel, package or lot of agricultural seeds. The said Commissioner of Agriculture is hereby empowered to prescribe the form of such stamps and adopt such regulations as may be necessary for the enforcement of this Act.

SEC. 13. *Be it further enacted*, That there is hereby appropriated, for the purpose of enforcing the provisions of this Act, a sum not exceeding the amount of fees and fines collected, and moneys or proceeds derived from the seizure and sale of agricultural seeds under its provisions. Such expenses shall be paid by warrant of the State Comptroller upon bills filed by the Commissioner of Agriculture. All fees collected under the provisions of this Act shall be paid into the State treasury.

SEC. 14. *Be it further enacted*, That all laws and parts of laws in conflict with this Act be and the same are hereby repealed.

SEC. 15. *Be it further enacted*, That this Act shall take effect from and after the first day of June, 1909, the public welfare requiring it.

Passed April 27, 1909.

M. HILLSMAN TAYLOR,
Speaker of the House of Representatives.

WM. KINNEY,
Speaker of the Senate.

Approved April 30, 1909.

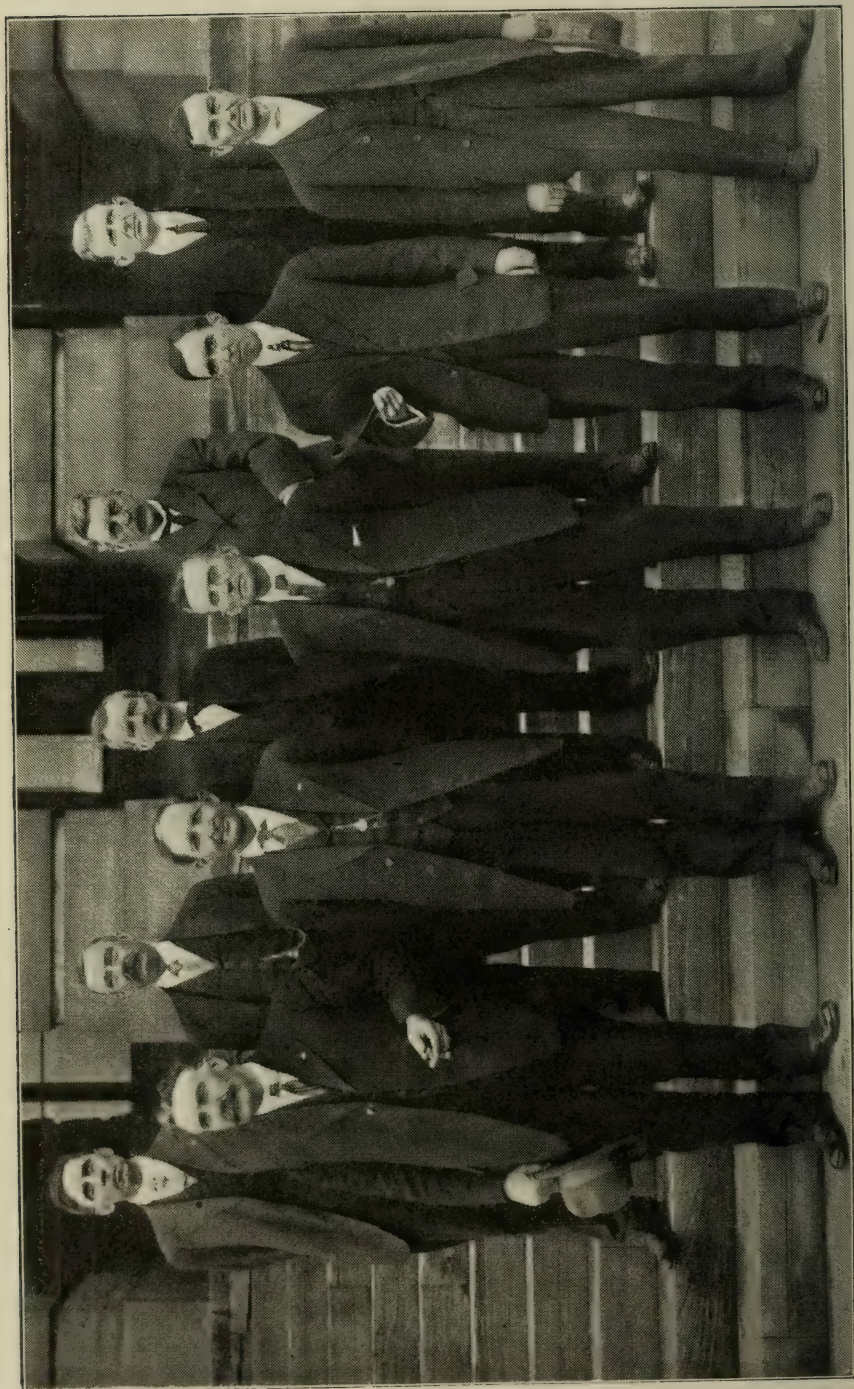
MALCOLM R. PATTERSON, *Governor.*



STATE CAPITOL

Bureau of Immigration

Report of Commissioner T. F. Peck to
His Excellency B. W. Hooper, Governor
December 19, 1912



TENNESSEE IMMIGRATION BUREAU.

Bottom row, left to right: Rutledge Smith, Assistant Commissioner; T. F. Peck, Commissioner; Hervey Whitfield, Assistant Commissioner; John R. Williams, Assistant Commissioner; J. W. Russwurm, Secretary State Fair.
 Top row, left to right: T. G. Settle, Statistician; J. J. B. Johnsonius, Assistant Commissioner; Jesse Tomlinson, Assistant Commissioner.

BUREAU OF IMMIGRATION

REPORT OF COMMISSIONER T. F. PECK

TO HIS EXCELLENCY B. W. HOOPER, GOVERNOR:

The policy of the Bureau of Immigration during the present administration has been to lay a foundation for permanent growth. We began with a field practically untouched, so far as Tennessee was concerned. The indifference shown to improved methods in agriculture by the majority of our farmers in allowing their fields to wash, waste places to grow up in weeds and briers, and their fences and buildings to fall into decay made a poor impression on the tourist or home seeker passing through the State looking for homes.

TENNESSEE'S ADVANTAGES.

We know our advantages of soil, climate, and rainfall; but these advantages are not known by those coming into the State from other sections, and estimates of our State were not infrequently formed from what was seen from the car window. The stranger took it for granted that the occasional prosperous farms were the only ones capable of development or improvement.

It has been the effort of the Bureau of Immigration, working through various channels with the limited means appropriated for that purpose, to correct the false impressions abroad as well as to make our own people acquainted with their advantages that through their prosperity they could themselves be the best advertisement of Tennessee as the land of opportunity for the home seeker and investor.

COLLECTING DATA.

We had at the very beginning to collect data showing the possibilities of Tennessee soils, the advantages of our climate, the abundant rainfall, and other features especially favorable. There is an abundance of evidence showing that our State is especially favored, and offers advantages and opportunities to be found in no other State in the South whither the tide of immigration is now flowing and will continue in increasing volume during the next few years.

We have soils to meet any requirement of the farmer, the market gardener, the fruit grower, and the live stock producer. Ours is the best country for the man of moderate means, as there are more and better opportunities for diversified farming than elsewhere, and there is a certainty of profitable returns from whatever is put into the soil. The seasons are regular, the rainfall ample and well distributed, and there is no fear of crop failure.

STATE WILL REAP BENEFITS.

For the work of the Bureau of Immigration there was appropriated by the last General Assembly \$10,000, and this amount has been used to the best possible advantage. The State and its opportunities have been widely advertised, and I have reason to believe from results already attained that the State will reap large benefits in the addition to its population of large numbers of the thrifty, energetic, and industrious farmers of the North and Northwest, where farming lands have advanced in price to the point where they are out of reach of the man of moderate means.

PUBLICATIONS OF BUREAU.

The first publication for the home seeker was "Facts about Tennessee," a booklet of forty-eight pages, handsomely illustrated, giving the essential facts about our agricultural, mineral, and timber resources, our educational institutions, the progress we are making in industrial development, improved highways, etc. This was followed by a map of Tennessee, illustrated by graphics, showing our crop production, mineral, phosphate, coal, and forest areas, and our educational status, and on the reverse side a description of the State by divisions and by counties in detail.

Two editions of 15,000 each of "Facts about Tennessee" have about been exhausted and an edition of 10,000 of the maps, and still the demand for them is strong. We have another map with the printers that will give a description of the soils, elevations, etc.

COUNTY BOOKLETS.

Through the efforts of the Bureau of Immigration several counties have been induced to publish booklets giving detailed description of their agricultural and other advantages, and the Bureau has assisted in their distribution, giving them a wide circulation in the Northern and Northwestern States. Other counties have now under consideration the matter of issuing advertising matter of this character.

EXHIBITS TO NORTH AND NORTHWEST.

Last January the Bureau of Immigration sent out two exhibits—one, with J. J. B. Johnsonius and T. G. Settle in charge, into Missouri, Iowa, and Illinois, and another, with Hervey Whitfield and I. G. McCalla in charge, into Indiana and Ohio.

Much interest was aroused by these exhibits, and a large quantity of advertising matter was placed in the hands of those who were interested enough to visit their headquarters. Through these exhibits and the advertising matter sent out from the department many people have been brought to the State, some of whom have permanently located. During the year just closing fifteen families from these States have been located in one county—Cumberland—and many other counties have received desirable acquisitions to their population from these States.

Mr. Johnsonius made a second trip over the territory covered by his first expedition and Mr. Whitfield over the territory covered

on his first tour, both in response to interested inquirers from those sections.

In November and December, 1912, J. J. B. Johnsonius and A. L. Garrison made a trip to Holland, Mich., and other sections with an exhibit and returned with a list of more than a thousand names of people seeking information about the opportunities in Tennessee for the home seeker and investor.

MEETING REQUIREMENTS OF HOME SEEKERS.

In all its efforts the Bureau of Immigration has kept in mind the fact that home seekers to be worth anything to Tennessee must make good for themselves, and every care has been exercised to find out the requirements of the individual and then try to select



TENNESSEE IMMIGRATION BUREAU EXHIBIT AT PELLA, IOWA, IN
FEBRUARY, 1912.

the section of the State where conditions would meet such requirements.

Evidence is not lacking that great interest has been aroused in the Northern and Northwestern States, and that the interest is growing daily. Several large tracts of land have been purchased by Northern parties for colonization purposes, and this department is in receipt daily of inquiries by mail from all sections of the country as well as personal visits of those seeking homes or opportunities for advantageous investment.

PRICE OF LANDS IN OTHER STATES.

The high price of agricultural lands in the States of the North and Northwest has made it necessary for those seeking for invest-

ments in that line to look elsewhere. The completion of the Panama Canal next year will mark the beginning of an era of industrial development in the South not now to be estimated in its magnitude and in its effect on the value of farm lands in the Southern States. The tide of immigration is now turning toward the South, and Tennessee, with cheap lands and great natural resources, should be in position to take advantage of coming conditions and reap a large benefit.

MORE LIBERAL APPROPRIATION NEEDED.

The incoming legislature should make a more liberal appropriation for this work in order that it may be conducted on a scale commensurate with the great good possible to be accomplished in the next few years.

APPOINTMENT OF STATISTICIAN.

In September, 1911, the office of Statistician of the Bureau of Immigration was created, and Mr. T. G. Settle was appointed to this position. He did valuable work for the Bureau, and served in this capacity until July 1, when he was made Chief Clerk of the Department of Agriculture, and the office of Statistician was abolished for the time, but should be made a permanent place.

FINANCIAL STATEMENT.

Following is the financial statement of the Bureau of Immigration since June 1, 1911:

Biennial appropriation	\$10,000 00	
Salary of T. G. Settle	\$1,175 00	
Printing and advertising	2,461 39	
Postage	340 00	
Expenses of exhibits sent into North and North-west	2,512 91	
Other expenses of Bureau.....	1,236 09	7,725 39
		<hr/>
Balance on hand December 19, 1912.....		\$2,274 61

PUBLICATION OF SOIL MAP.

From the amount now on hand is to be deducted \$1,350 for a soil and sectional map of the State, contract for which has been let and which is now in course of preparation, and will come from the press about February 1.

Respectfully submitted.
December 19, 1912.

T. F. PECK. *Commissioner.*

TENNESSEE

THE LAND OF OPPORTUNITY, OF MOUNTAIN AND
VALLEY AND PLATEAU AND PLAIN, OF FER-
TILE AND PRODUCTIVE SOIL, EXTENDS
A HEARTY WELCOME TO THRIFTY
HOME SEEKERS

SOME OF THE MANY ADVANTAGES OFFERED THOSE
WHO ARE CONTEMPLATING A CHANGE OF
LOCATION AND WILL CAST THEIR
LOT IN THIS STATE

AREA AND BOUNDARIES.

The area of Tennessee is 42,022 square miles, or 26,912,000 acres, of which about 21,000,000 are farm land and about half of this improved. The greatest length of the State from east to west is 432 miles, and its width is 110 miles. The State is bounded on the north by Kentucky and Virginia, east by North Carolina, south by Georgia, Alabama, and Mississippi, and west by the Mississippi River, separating the State from Missouri and Arkansas. The State is divided into ninety-six counties, and there are eight natural divisions and three political divisions, the latter known as East, Middle, and West Tennessee.

Assessed valuation of property in 1910, \$500,000,000.

MOUNTAINS AND RIVERS.

The mountain ranges are the Appalachian, in the extreme eastern end of the State, and the Cumberland, extending across the State and separating East and Middle Tennessee.

The principal rivers are the Mississippi, flowing along the western border of the State; the Tennessee, flowing through East Tennessee into Alabama, thence again into Tennessee and emptying into the Ohio in Kentucky; and the Cumberland, flowing from Kentucky through the northern part of Middle Tennessee and back into Kentucky, emptying into the Ohio at Smithland. The rivers of Tennessee are navigable for a total of about 1,400 miles. All principal cities have advantage of river rates.

THREE DIVISIONS.

East Tennessee in the extreme eastern portion is mountainous, seamed with valleys. Some of the mountains rise in peaks to more than 6,000 feet, descending in abrupt slopes to foothills of 1,000 to 1,500 feet in altitude and overlooking the great Valley of East Tennessee. The western part of this grand division includes the Cumberland Plateau, with an elevation of more than 2,000 feet above sea level. East Tennessee is drained by the Tennessee, French Broad, Hiwassee, Watauga, Holston, Clinch, Powell, and Nolachucky Rivers and affluents.

Middle Tennessee lies west of the Cumberland Plateau, and has an undulating or rolling surface, with level reaches and an elevation of 500 feet below the Highland Rim, which partly circumscribes it, and where the elevations are from 800 to 900 feet. This section is drained chiefly by the Tennessee, Cumberland, Caney Fork, Buffalo, Duck, Harpeth, Obed, Roaring, and tributary streams.

West Tennessee is separated from the Middle Division by the Tennessee River, and is composed of plateau, rolling uplands, and bottom land. The highlands range from 1,000 to 1,500 feet above sea level. The western valley—Valley of the Tennessee—hardly exceeds 400 feet

in altitude. The plateau rises to about 700 feet. The altitude of the Mississippi bottoms averages about 250 feet above tidewater. West of the Tennessee the lands are generally level and undulating. West Tennessee is drained by the Mississippi, Loosahatchie, Wolf, Obion, Forked Deer, and Big Hatchie Rivers and tributaries.

SOILS.

The soils of East Tennessee are light, sandy, and gravelly in the uplands and rich calcareous in the valleys.

The soils of Middle Tennessee are a sandy loam, cherty lands, and fertile limestone formations.

The soils of West Tennessee range from sandy loams to loess formation and alluvial bottoms.

CLIMATE AND RAINFALL.

In climate Tennessee is exempt from the extremes of heat and cold, varying from a freezing temperature in January to about 80 degrees in the summer months. The average temperature of the year is about 60 degrees.

The average annual rainfall is about 53 inches, and is so distributed during the growing season that crop failures are unknown. The period between killing frosts varies from 162 to 228 days, giving ample time for tender vegetation to mature.

AGRICULTURE.

Diversified farming is general in the State, although specialization is practiced in some sections. Corn, cotton, and wheat are the great staples, leading in importance in the order named. Clover, timothy, soy beans, cowpeas, vetch, and alfalfa are grown for hay. Stock are fed and fattened on a large scale, and this industry is increasing in importance. Hogs are an important product. Poultry-raising is general. Dairying is extensively followed near the larger cities and towns. Considerable attention is being given to market-gardening, and early vegetables and fruits are shipped in large quantities to the Northern markets. Tennessee is almost entirely free from insects injurious to vegetation.

LIVE STOCK.

Stock-raising in all its branches is generally followed, but the industry is far short of its possibilities. Some advantages the stock raiser enjoys in this State are an agreeable climate, an abundance of excellent food easily produced, a long outdoor grazing season, and a market in which the demand is always in excess of the supply. As a stock-raising country Tennessee has no superior and but few equals among the States of the Union. Tennessee mules are noted the world over for their good qualities, and the entire world is the State's market for this useful animal. In the rich bluegrass sections of the State have been bred some of the fastest running and harness horses the world has produced. Sheep and hogs are produced at a minimum cost, and this industry is increasing in importance.

Tennessee has a State Live Stock Inspector, Dr. George R. White, who, with capable assistants, makes careful inspection and takes prompt action to eradicate all contagious diseases among animals brought into the State.

POULTRY-RAISING.

No State offers greater inducements to those desiring to engage in the poultry industry, which is fast developing into one of the great sources of wealth of the State. Cash markets are convenient in every city and town, and the large dealers have buyers on the road all the time. Farmers are devoting more attention to this business, and find in it a steady income during all seasons of the year.

TRANSPORTATION FACILITIES.

The transportation facilities of Tennessee are such that nearly every community in the State is in close touch with the markets and centers

of population. There are five great railroad systems in the State, which, with some smaller roads, have 3,933.24 mileage. The Mississippi and Tennessee Rivers in the western part of the State, the Cumberland in the central, and the Tennessee in the eastern section afford cheap means of transportation.

PUBLIC HIGHWAYS.

The progress of the good roads movement in Tennessee has been remarkable during the last few years. Many of the counties of the State have fine systems of pikes, and other counties have issued bonds and are now expending money on road improvement. The Memphis-to-Bristol Highway, suggested by Gov. Ben W. Hooper, and which is now in course of construction, has stimulated the movement for good roads



CROWD IN FRONT OF TENNESSEE IMMIGRATION BUREAU EXHIBIT AT CENTERVILLE, IOWA, IN FEBRUARY, 1912.

in the State. Counties not on the line of the main highway, as mapped out, are building pikes to connect with it; and in a few years, as a result of this movement, Tennessee will have one of the finest highway systems to be found in the Union.

LAND VALUES.

Unimproved lands purchased within the past few years for a few dollars an acre have been developed into splendid farms, and some have produced yearly profits exceeding the original cost of the land. The opportunities for Northern farmers are well worth their consideration. Improved farm lands can be bought from \$25 to \$50 per acre; unimproved land, from \$3 to \$10.

SCHOOL SYSTEM.

The State University, located at Knoxville, provides general academic instruction of a high order, requiring for entrance to its Bachelor's course fourteen Carnegie units and for graduation therefrom the usual four years of college work. It maintains Medical and Dental Departments at Memphis. The Law and Engineering Departments are at

Knoxville. Here also is the Agricultural and Mechanical College, an integral part of the State University. The college farm is within a few miles of the city.

The East Tennessee Normal School is located at Johnson City. The city gave \$75,000 to secure its location there. Washington County contributed the same amount, and one of Johnson City's public-spirited citizens donated a site estimated at \$75,000.

The Middle Tennessee Normal School is located at Murfreesboro. Here also generous donations on the part of the city and county were made, amounting to \$180,000. A splendid campus of 100 acres was secured and a plant extensive and admirably equipped has been provided.

The West Tennessee Normal School is located near Memphis, in Shelby County. That city and county made appropriations aggregating more than \$400,000 to secure the school.

The Agricultural and Industrial Normal School for Negroes is located at Nashville, the Davidson County Court having made a generous appropriation of \$80,000 for its establishment there.

All these schools are under the control of the State Board of Education, and the State has made reasonable provision for their maintenance.

The city schools of Tennessee are equal to the best in the country. The large cities—Memphis, Nashville, Chattanooga, and Knoxville—are well provided with excellent buildings, modern courses of study, trained teachers, and every facility for first-class school work.

The county high schools have rapidly increased in number during the last few years under the stimulus of the State supplemental appropriation. They are operated under special tax levied by the county, together with the State apportionment. There are now nearly one hundred in the State—about twenty of the first class, with a four years' course of genuine high school work. Agriculture and domestic science are being taught, and demonstration farms are being operated in connection with the schools.

The State system of elementary schools covers every county. With few exceptions they are controlled by County Boards of Education.

Tennessee is noted for its private schools. There are 202 listed in the last report of the State Superintendent of Public Instruction. They reported last year more than 1,800 teachers employed, with 37,000 pupils enrolled. Some of them are well endowed, and the total value of their property is nearly fourteen million dollars.

INFORMATION FURNISHED.

Information as to the agricultural resources of Tennessee, the prices of land in the various sections, and the opportunities for the location of farming and live stock industries will be cheerfully furnished by T. F. Peck, Commissioner of Agriculture, State Capitol, Nashville, Tenn.

DESCRIPTION OF TENNESSEE BY COUNTIES.

EAST TENNESSEE.

Anderson County.—Population in 1910, 17,717; population in 1900, 17,634. Assessed valuation of taxable property, 1910, \$2,380,740. Average assessed value of land, \$7.10. Area, about 360 square miles. Railway mileage, 71. Drained by the Clinch and Powell Rivers. Its valleys are very fertile. Wheat, corn, and oats are staple products. County seat, Clinton, twenty-two miles northwest of Knoxville; population, 1,100; has churches, schools, a weekly newspaper, and several flouring mills and other industries. Xen Z. Hicks, President, and D. C. Richards, Secretary, County Immigration Bureau, Clinton.

Bledsoe County.—Population in 1910, 6,329; in 1900, 6,626. Assessed valuation of taxable property, 1910, \$1,095,805. Average assessed value of land, \$3.20. Area, 300 square miles. Railway mileage, 15. Drained by Sequatchie River and tributaries. Surface somewhat mountainous. Live stock and fruits are the principal products of the county. Pasturage is excellent. Large areas of fine timber. Corn, oats, and wheat are

successfully grown. Coal and limestone abound. Pikeville is the county seat; population, 500; churches and schools. County Immigration Bureau officials: S. L. Robinson, President, and R. B. Schoolfield, Secretary, Pikeville.

Blount County.—Population, 1910, 20,809; 1900, 19,206. Assessed valuation of taxable property, 1910, \$3,619,440. Average assessed value of land, \$6.80. Area, 614 square miles. Railway mileage, 100. Drained by the Holston and Little Tennessee Rivers, former navigable for steamboats. Surface, mountainous, with fertile valleys, which abundantly produce wheat, corn, oats, and fruit. Live stock industry growing. Forests of oak and pine. Marble and iron are mined. County seat, Maryville, on railroad; has churches, public schools, colleges, and weekly newspaper. Population, 2,400. Secretary County Immigration Bureau, at Maryville, will furnish information.

Bradley County.—Population, 1910, 16,336; 1900, 15,759. Assessed valuation of taxable property, 1910, \$2,932,438. Average assessed value of land, \$5.50. Area, 280 square miles. Railway mileage, 35. Drained by Hiwassee River and tributaries. County borders on Georgia, and surface is hilly and well timbered; soil, fertile. Wheat, corn, and live stock are the leading products, and the county is rapidly coming to the front in fruit-growing, especially apples, peaches, and strawberries. Soil and climate well adapted to all kinds of fruits. Cleveland, the county seat, is situated on the Southern Railway; population, 5,549; well supplied with churches and schools; has a large woolen mill and trousers factory, a stove foundry, a large coffin factory, an electric light plant, banks, and weekly newspapers. Information furnished by Secretary of County Immigration Bureau, Cleveland.

Campbell County.—Population in 1910, 27,387; in 1900, 17,317. Assessed valuation of taxable property, 1910, \$4,187,560. Average assessed value of land, \$8.02. Area, 488 square miles. Railway mileage, 81. Drained by Clinch River and tributaries of Cumberland River. Surface mountainous and covered with fine forests. Staple products are corn, oats, and grass; well adapted to live stock industry, which is increasing in importance. Rich coal deposits are found in the county. Jacksboro, county seat, 33 miles from Knoxville; population, 834. Coal mines are in operation near this place. Has general stores, churches and schools, and weekly newspaper. LaFollette, with about 3,000 population, is a flourishing town, with mining industries, banks, and a weekly newspaper. One of the largest iron furnaces in the South is in operation there. County Immigration Bureau: John Jennings, Sr., President; H. M. LaFollette, Secretary, LaFollette.

Carter County.—Population, 1910, 19,838; 1900, 16,688. Assessed valuation of taxable property, 1910, \$1,921,680. Average assessed value of land in county, \$5.13. Area, 298 square miles. Railway mileage, 67. Drained by Watauga River. Surface mountainous, with fertile valleys and well timbered. Corn, oats, grass, and live stock are the staple products. An abundance of iron ore is found in the county. The county seat is Elizabethton, located east of Johnson City; has banks, weekly newspapers, grist, saw, and woolen mills, churches and schools; iron works in vicinity; population, 2,478. Information will be furnished by County Immigration Bureau, C. C. Collins, President, Elizabethton; C. C. Taylor, Secretary, Milligan.

Claiborne County.—Population, 1910, 23,504; 1900, 20,696. Assessed valuation of taxable property, 1910, \$1,689,194. Average assessed value of land in county, \$5.65. Area, 472 square miles. Railway mileage, 37. Drained by the Powell and Clinch Rivers. Surface generally mountainous and well covered with timber. Soil in valleys is very fertile. Wheat, corn, oats, and grass are staple products. Iron, zinc, and lead ores are found in the county. Tazewell, county seat; population, 886; has schools, churches, and weekly newspaper. Coal is found near the town. County well adapted to raising of live stock. County Immigration Bureau: J. H. Rector, President; J. Frank White, Secretary, Cumberland Gap, Tenn.

Cocke County.—Population, 1910, 19,399; 1900, 19,153. Assessed valuation of taxable property, \$2,493,040. Average assessed value of land

in county, \$6.26. Area, 458 square miles. Railway mileage, 48. Drained by the French Broad and Nolachucky Rivers. Smoky Mountain extends along the southeastern border of the county, and this section is covered with timber. Soil in valleys is very fertile. The staple products are corn, wheat, grass, and live stock. Cocke County is expending \$300,000 on its public roads. Newport, the county seat, is on the Southern Railway 50 miles east of Knoxville; has a population of 2,000, several churches and schools, two weekly newspapers, bank, cotton and flour mills. Information will be furnished by W. J. McSwain and A. J. McMahon, President and Secretary of County Immigration Bureau, Newport.

Grainger County.—Population, 1910, 13,888; 1900, 15,512. Assessed valuation of taxable property, \$1,511,750. Average assessed value of land in county, \$7.53. Area, 300 square miles. Railway mileage, 47. Drained by Clinch and Holston Rivers. Has a high ridge surface called Clinch Mountain. County is well timbered; soil in valleys very fertile. Corn, oats, wheat, grass, and live stock are the staple products. Fine iron ore deposits are found in the county. County intersected by the Middlesboro Branch of the Southern Railway and the Knoxville and Bristol Division of the same road. Tate Spring and other noted mineral springs are in this county. Rutledge, the county seat, is near the base of Clinch Mountain, about 33 miles northeast of Knoxville; population, 400; has a bank, schools, churches, and weekly newspaper. Information will be furnished by W. T. Phillips, President, or Thomas Chesher, Secretary, County Immigration Bureau, Rutledge.

Greene County.—Population, 1910, 31,083; 1900, 30,596. Assessed valuation of taxable property, \$3,338,140. Average assessed value of land in county, \$6.30. Area, 580 square miles. Railway mileage, 31. Drained by Nolachucky River and Lick Creek. Surface partly mountainous and well timbered. Valleys are fertile. Staple products are corn, wheat, oats, grass, tobacco, and live stock. The Southern Railway intersects the county. Fine deposits of iron and limestone are found in this county. Greeneville, the county seat, is on the Southern Railway, and is one of the most progressive towns in East Tennessee; has fine churches, schools, well-equipped newspaper plants, electric light plant, three banks, business houses, and manufacturing establishments; population, 2,000. Information will be furnished by J. C. Park, President, or H. P. Ernest, Secretary of County Immigration Bureau, Greeneville.

Hamblen County.—Population, 1910, 13,650; 1900, 12,728. Assessed valuation of taxable property, \$2,880,025. Average assessed value of land, \$13.40. Area, 150 square miles. Railway mileage, 31. Drained by the Holston and French Broad Rivers. The surface is undulating and the soil fertile. The Southern Railway intersects the county. Grass, fruit, live stock, and poultry are the principal products of the county. It is one of the best fruit counties in the eastern division of the State. Morristown, the county seat, is situated on the Holston River and the Southern Railway, and has a population of 4,000. It is a flourishing town, with splendid churches and schools, several banks, many prosperous business houses and manufacturing establishments, and two well-equipped newspaper establishments. It is one of the largest poultry-shipping points in the State. Information will be furnished by Thomas H. Reeves, President, or E. M. Early, Secretary, County Immigration Bureau, Morristown.

Hamilton County.—Population, 1910, 89,627; 1900, 61,695. Assessed valuation of taxable property, \$34,686,495. Average assessed value of land, \$17.40. Area, 575 square miles. Railway mileage, 110. The county has a varied and fertile soil, well adapted to the growth of all kinds of crops, including the different grains, grasses, fruits, and vegetables. Truck-farming is carried on to a considerable extent, and there is a large business in the shipment of early vegetables from Chattanooga to the Northern markets. The length of the growing season makes it possible for the truck farmer to grow as many as three crops in one year on the same ground, and a ready and convenient market is found at good prices. The growing of fruits is receiving considerable attention and is increasing in importance. Large shipments of strawber-

ries are made every year. Poultry and dairy business is also profitable. Prices of farms vary from \$10 to \$100 per acre, according to improvements and location. Staple products are corn, wheat, oats, cattle, and hogs. Coal and iron are mined on a large scale. The county is traversed by the Nashville, Chattanooga & St. Louis Railway, the Southern Railway, the Cincinnati Southern Railroad, and other roads enter from the south. The county has a good road system, and there are eleven free turnpikes. Lookout Mountain is situated in the southern part of the county, and is famed for its magnificent scenery and for its historic interest. Chattanooga, the county seat, with a population of 44,604 (nearly 80,000 including suburbs), is located at the foot of Lookout Mountain, on the Tennessee River, and is the largest city in the eastern end of the State. It has river and railroad connections furnishing first-class transportation facilities. There are ten railroads entering the city. Chattanooga's commercial importance is assured by the many manufacturing industries and the agricultural interests surrounding it. Information will be furnished by the Board of Trade, Chattanooga.

Hancock County.—Population, 1910, 10,778; 1900, 11,147. Assessed valuation of taxable property, \$594,575. Average assessed value of land, \$4.15. Area, 260 square miles. Railway mileage, none. Drained by the Clinch River. Its surface is partly mountainous and covered with a fine growth of timber. It is rich in all kinds of minerals, including iron ore, lead, zinc, marble, granite, ocher, phosphates, coal oil, coal, and silver. Corn, wheat, oats, and live stock are staple products. Sneedville is the county seat; population, 200; is situated on the Clinch River, 50 miles northeast of Knoxville; has churches, schools, bank, and newspaper. Information will be furnished by H. F. Coleman, President, or R. A. Green, Secretary, Immigration Bureau at Sneedville.

Hawkins County.—Population, 1910, 23,587; 1900, 24,267. Assessed valuation of taxable property, \$2,532,670. Average assessed value of land, \$6.10. Area, 490 square miles. Railway mileage, 20. Drained by the Clinch River. Its surface is hilly, valleys fertile. The county is covered with a growth of fine timber, including hardwoods common to the South. Minerals found are iron, zinc, lead, barytes, magnesia, iron pyrites, salt, marble, and oil. Corn, wheat, oats, grass, and live stock are staple products. Fruit-growing can be profitably conducted. Poultry and dairy products are important industries. The Southern Railway passes through the southern portion of the county. The county has good roads, and its many fine mineral springs make it noted as a health resort. Rogersville, the county seat, is situated on the Southern Railway, and has a population of 1,250; has five churches, prosperous schools, two banks, and three newspapers. Information will be furnished by John W. Brown, President, or DeWolf Miller, Secretary, County Immigration Bureau, Rogersville.

James County.—Population, 1910, 5,210; 1900, 5,407. Assessed valuation of taxable property, \$793,244. Average assessed value of land, \$5.40. Area, 210 square miles. Railway mileage, 16. The county is traversed by the Southern Railway. Surface rolling and soil fertile. There is a large acreage of unimproved lands, the average price being about \$5 per acre. Valuable iron ores are found in the county, mostly undeveloped. Cheap lands, healthful climate, and low tax rate are inducements to home seekers. Ooltewah is the county seat; population, 500; is on the Southern Railway. It has churches, schools, bank, and weekly newspaper. Information will be furnished by Secretary Immigration Bureau, Ooltewah.

Jefferson County.—Population, 1910, 17,755; 1900, 18,590. Assessed valuation of taxable property, \$2,709,508. Average assessed value of land, \$10.50. Area, 310 square miles. Railway mileage, 22. Drained by the Holston and French Broad Rivers. Surface marked by high ridges and fertile valleys. It has a fine timber growth, including the hardwoods. Iron ore and limestone are found in paying quantities. Wheat, corn, oats, grasses, fruit, and live stock are staple products. The Southern Railway intersects the county. This county has a fine system of public roads. Dandridge, the county seat, lies three miles north of the French Broad River. It has a population of 450, and is a

flourishing town, with schools, churches, bank, and commercial and manufacturing enterprises. Mossy Creek and Jefferson City are flourishing towns. County Immigration Bureau: W. S. Woodward, President; Hal S. Harris, Secretary, Dandridge.

Johnson County.—Population, 1910, 13,191; 1900, 10,589. Assessed valuation of taxable property, \$2,709,508. Average assessed value of land, \$4. Area, 340 square miles. Railway mileage, 39. Watauga River drains a part of the county. Surface mountainous, with fertile valleys. Grazing fine for sheep and cattle. Fine growth of chestnut, ash, oak, and other varieties of timber. Corn, wheat, oats, and the grasses are staple products. Iron ore is found in the county. Mountain City, the county seat, has a population of 600, a weekly newspaper, schools, churches, and commercial establishments. Immigration Bureau: R. E. Donnelly, President, and J. T. Fuller, Secretary, Mountain City.

Knox County.—Population, 1910, 94,187; 1900, 74,302. Assessed valuation of taxable property, \$33,593,015. Average assessed value of land, \$23.50. Area, 612 square miles. Railway mileage, 119. Drained by the Tennessee and its tributaries. The farms are very rich and productive along these streams and in the other valleys. Improved valley lands range between \$20 and \$100 per acre. Fine macadamized turnpikes reach every section of the county. Lands around Knoxville are well adapted to truck-farming. All kinds of early vegetables are grown and find a ready market, and are shipped North. Grasses grow in abundance, hay being a valuable product. An invigorating climate, good society, and cheap lands are inducements to home seekers. Knoxville, the county seat, with a population of 36,346 (about 80,000 including suburbs), is situated on the Tennessee River, and has all the conveniences of a modern city. Railroads entering the city are the Southern, Louisville & Nashville, and Knoxville, Sevierville & Eastern, which, with their various branches, reach all important points. Knoxville has many churches and schools and prosperous daily and weekly newspapers. The University of Tennessee is located here, and there are many private schools and a fine public school system. Information will be furnished by Chamber of Commerce, Knoxville.

Loudon County.—Population, 1910, 13,612; 1900, 10,833. Assessed valuation of taxable property, \$2,018,137. Average assessed value of land, \$8. Area, 256 square miles. Railway mileage, 29. Drained by the Little Tennessee River. Surface is hilly, but soil fertile. There is a fine forest growth in the county, and the price of land ranges from \$5 to \$25 per acre. Good opening in the county for marble and furniture industries. The county is intersected by the Southern Railway. Loudon, the county seat, with a population of 1,000, is situated on the Southern Railway and the Tennessee River. It has splendid schools, churches, weekly newspaper, and general stores. Information will be furnished by Q. A. Tipton, President, or E. L. Griffith, Secretary, County Immigration Bureau, Loudon, Tenn.

Marion County.—Population, 1910, 18,820; 1900, 17,281. Assessed valuation of taxable property, \$2,694,206. Average assessed value of land, \$5.59. Area, 500 square miles. Railway mileage, 67. Intersected by the Sequatchie River and touched by the Tennessee on the southeast corner. Surface broken by high ridges running parallel with Cumberland Mountains. Soil is fertile, and there is a fine forest growth. Staple products are corn, cotton, oats, wheat, hay, and live stock. Coal is mined in considerable quantity. There is a considerable amount of improved and unimproved land in the county which can be purchased at very reasonable figures. Inducements to home seekers are very inviting. Jasper, the county seat, with a population of 1,000, is situated on the Sequatchie River and the Nashville, Chattanooga & St. Louis Railway; has a weekly newspaper, several churches, schools, and stores. South Pittsburg and Whitwell are flourishing towns. Information will be furnished by County Immigration Bureau, Jasper, P. H. Thatch, President, and A. R. Hall, Secretary.

McMinn County.—Population, 1910, 21,046; 1900, 19,163. Assessed valuation of taxable property, \$2,422,085. Average assessed value of land, \$5.62. Area, 452 square miles. Railway mileage, 56. Bounded on

the south by Hiwassee River. Fine growth of timber, and soil very fertile in the valleys. The Southern Railway intersects the county. Corn, wheat, oats, grasses, and live stock are staple products. This county is expending \$300,000 on its highway system. Athens, the county seat, with a population of 2,400, is situated on the Southern Railway about 55 miles southwest of Knoxville. It has a fine electric light plant, churches, good schools, the U. S. Grant University, and three weekly newspapers. Etowah, a flourishing town with a population of about 4,000, is on the main line of the Louisville & Nashville Railroad sixty miles south of Knoxville. It is division headquarters of the Atlanta Division of the L. & N. Railroad. The shops of this railroad at this point employ about 750 men. Etowah has three banks, one newspaper, fine water and light plants, manufacturing and commercial establishments, and is in a rich agricultural section. This town is only five years old. Information will be furnished by C. F. Keith, President County Immigration Bureau, Athens, or C. A. Webb, Secretary, Etowah.

Meigs County.—Population, 1910, 6,131; 1900, 7,491. Assessed valuation of taxable property, \$995,619. Average assessed value of land, \$6. Area, 200 square miles. Railway mileage, none. Bounded on the west by Tennessee River the entire length of county. Hiwassee River crosses the southern portion. River and valley lands are very fertile and are worth from \$20 to \$100 per acre; ridge and timber lands, from \$2 to \$10 per acre. Corn, wheat, oats, hay, and live stock are the principal products. Decatur, the county seat, with a population of 200, is located two and one-half miles east of the Tennessee River, and has a weekly newspaper, bank, and general stores. Information will be furnished by Immigration Bureau, Decatur.

Monroe County.—Population, 1910, 20,716; 1900, 18,585. Assessed valuation of taxable property, \$3,901,410. Average assessed value of land, \$6.16. Area, 580 square miles. Railway mileage, 41. The county joins North Carolina, and is bounded on the north by the Little Tennessee River. The eastern portion is mountainous and covered with valuable timber. Gold, iron ore, copper, and barytes are found in the mountainous portion of the county. A large aluminum plant is being constructed. The soil is fertile. Principal products are corn, wheat, potatoes, grasses, and live stock. This county recently voted to spend \$300,000 on its public roads. The Louisville & Nashville and the Southern Railway enter the county, and the Tellico Railway reaches the eastern and mountainous portion of the county. The county presents a very inviting field for immigrant farmers. The average value of improved land in the county is \$10; unimproved, from \$2 to \$4. Madisonville, the county seat, with a population of 1,000, is located on the Atlanta Division of the L. & N. Railroad 45 miles from Knoxville. It has a weekly newspaper, a bank, and good schools. Sweetwater, another flourishing town, has a weekly newspaper, bank, military school, and general stores. County Immigration Bureau: T. E. H. McCroskey, President, and R. C. Kefauver, Secretary, Madisonville.

Morgan County.—Population, 1910, 11,458; 1900, 9,587. Assessed valuation of taxable property, \$1,609,206. Average assessed value of land, \$4.30. Area, 448 square miles. Railway mileage, 45. The county is drained by Embury and Obed Rivers. Its surface is hilly and well timbered with oak, chestnut, and pine. Corn, grasses, and live stock are staple products. Fruit-growing is a paying industry. A large deposit of coal is found in the county. The Southern Railway intersects the county. Improved land ranges from \$5 to \$10 per acre; unimproved, from \$2 to \$10, according to location. Wartburg, the county seat, with a population of 300, is 44 miles west of Knoxville, and has a weekly newspaper, bank, and general stores. County Immigration Bureau, Wartburg: Charles H. Davis, President; John M. Davis, Secretary.

Polk County.—Population, 1910, 14,116; 1900, 11,357. Assessed valuation of taxable property, \$3,402,327. Average assessed value of land, \$7. Area, 400 square miles. Railway mileage, 68. The Hiwassee and Ocoee Rivers flow through the county. The surface is mountainous and well timbered. The grazing for cattle and sheep is abundant. Extensive copper mines are operated in the county, and there are fine

quarries of gray limestone. Lead has also been found. Corn, wheat, grass, and live stock are the principal products. The Louisville & Nashville Railroad traverses the county. Benton, the county seat, with a population of 250, is on the Louisville & Nashville Railroad and three miles south of the Hiwassee River. It has churches, schools, and general stores. County Immigration Bureau: J. D. Clemmer, President, and A. E. Love, Secretary, Benton.

Rhea County.—Population, 1910, 15,410; 1900, 14,318. Assessed valuation of taxable property, \$2,260,185. Average assessed value of land, \$6.50. Area, 360 square miles. Railway mileage, 32. Drained by Tennessee River; surface partly mountainous. Cattle, corn, wheat, grass, and fruit are staple products. A remarkable advance has been made in recent years in the cultivation of the small fruits, and a large business is done each year in the shipment of strawberries. This county is noted for its fine apples, and fancy prices have been realized from the sale of this fruit. There is an abundance of coal and iron ore and fine forests of oak, hickory, gum, sycamore, and ash. The county is traversed by the Cincinnati Southern Railroad. Improved land ranges in price from \$20 for uplands to \$50 for river bottom lands; unimproved land, from \$5 to \$10 per acre. Dayton, the county seat, with a population of 2,500, is on the Cincinnati Southern Railroad 38 miles northeast of Chattanooga. It is a flourishing town, with good business houses, churches, schools, banks, two weekly newspapers, and a number of manufacturing establishments. Spring City and Grand View are flourishing towns, with good schools. Rhea Springs is a noted summer resort. County Immigration Bureau: James T. Crawford, President, and J. W. Swofford, Secretary, Dayton.

Roane County.—Population, 1910, 22,860; 1900, 22,738. Assessed valuation of taxable property, \$3,424,809. Average assessed value of land, \$7.90. Area, 450 square miles. Railway mileage, 62. County intersected by Clinch and Holston Rivers; surface mountainous and covered with fine forests of oak, hickory, pine, and other timber; soil fertile in valleys and river bottoms. Mineral resources are iron ore, coal, and fine building stone. Staple products are corn, wheat, grass, and live stock. Fine country for orchards and vineyards. A fine system of free turnpikes extends to every part of the county. Kingston, the county seat, with a population of 900, is at the junction of the Tennessee and Clinch Rivers; has good schools and churches, and is 120 miles from Chattanooga by water, with steamboat navigation. Harriman, population about 5,000, has two newspapers, banks, several manufacturing establishments, and a university. Rockwood, population about 4,000, is an iron and coke center, and employs many laborers in these industries. It has two banks, a weekly newspaper, schools, churches, and general stores. County Immigration Bureau: George P. Lindsey, President, and John Staples, Secretary, Rockwood.

Scott County.—Population, 1910, 12,947; 1900, 11,077. Assessed valuation of taxable property, \$1,432,725. Average assessed valuation of land, \$5.40. Area, 620 square miles. Railway mileage, 63. County borders on Kentucky, and is intersected by the Cumberland River. Surface hilly and covered with fine forests. Staple products are corn, grass, and live stock. Fruit-growing is increasing in importance, and the land is well adapted to this industry. Fine fire clay deposits are found. Huntsville, the county seat, with a population of 250, is 44 miles from Knoxville, and has a school, churches, a weekly newspaper, and business establishments. Other towns in Scott County are Helenwood and Oneida. County Immigration Bureau: John Toomey, President, Helenwood; and James F. Baker, Secretary, Huntsville.

Sequatchie County.—Population, 1910, 4,292; 1900, 3,326. Assessed valuation of taxable property, \$616,750. Average assessed value of land, \$2.90. Area, 250 square miles. Railway mileage, 14. Intersected by Sequatchie Valley and Sequatchie River. The soil in the valleys is fertile. One of the best grape-producing sections in the South. Fine hardwoods are found in many localities; and limestone, coal, and iron are found in abundance. Corn, wheat, oats, grass, and live stock are staple products. Fine grazing lands for cattle. Traversed by the Nash-

ville, Chattanooga & St. Louis Railway. Dunlap, the county seat, with a population of 1,200, is on the Sequatchie River, 40 miles from Chattanooga. County Immigration Bureau: W. B. Stewart, President, Dunlap; H. C. Farmer, Secretary, Delphi.

Sevier County.—Population, 1910, 22,296; 1900, 22,021. Assessed valuation of taxable property, \$2,428,940. Average assessed value of land, \$5.30. Area, 560 square miles. Railway mileage, 13. Borders North Carolina, and is intersected by the French Broad River. Surface mountainous and partly covered with oak, hickory, sycamore, chestnut, walnut, maple, and pine. Soil in valleys is rich and fertile. Fine limestone is quarried in the county. Wheat, corn, grass, and live stock are staple products. Grazing for live stock is abundant. Sevierville, the county seat, with a population of 700, is on the Little Pigeon River and the Knoxville, Sevierville & Eastern Railroad 30 miles from Knoxville. It has churches, schools, two weekly newspapers, and general stores and banks. County Immigration Bureau: W. L. Duggan, President, and A. T. Marshall, Secretary, Sevierville.

Sullivan County.—Population, 1910, 28,120; 1900, 24,935. Assessed valuation of taxable property, \$4,872,167. Average assessed value of land, \$7.60. Area, 410 square miles. Railway mileage, 66. The surface of this county is a beautiful undulating valley lying between the Cumberland and Appalachian Mountains, and is drained by the Holston River and the headwaters of the Tennessee River. Has a fine growth of ash, walnut, beech, maple, oak, hemlock, chestnut, and hickory. Soil is fertile, and there are deposits of iron ore of high grade and limestone of splendid fluxing quality. Staple products are fruits, wheat, corn, oats, grasses, live stock, poultry, eggs, and butter. Blountville, the county seat, is nine miles southwest of Bristol. Bristol (Tenn.) is located in this county, and has a population of 7,200, and is 131 miles from Knoxville. It is an up-to-date city, with all modern conveniences. Five railroads enter the city from north, south, east, and west, including the Southern and the Norfolk & Western. Bristol is in the center of a territory as rich in mineral deposits as any in the world. It has large lumber interests, the finest tannery in the South, a large paper mill, and a large variety of manufacturing establishments. A large iron furnace is located here, with cheap iron ore, coal, coke, and limestone near by, all of fine quality. Bristol is located in both Tennessee and Virginia. It has daily and weekly newspapers. Information will be furnished by S. L. King, President, or F. M. Runnels, Secretary, County Immigration Bureau, Bristol.

Unicoi County.—Population, 1910, 7,201; 1900, 5,851. Assessed valuation of taxable property, \$502,478. Average assessed value of land, \$2.72. Area, 196 square miles. Railway mileage, 17. Drained by Nolachucky River and intersected by the Carolina, Clinchfield & Ohio Railway. Surface mountainous. Cotton, corn, oats, grasses, and live stock are the principal products. Erwin, the county seat, with a population of 1,200, is 15 miles south of Johnson City, on the railroad, and has a weekly newspaper, churches, schools, and general stores. Information will be furnished by the county officials.

Union County.—Population, 1910, 11,414; 1900, 12,894. Assessed valuation of taxable property, \$784,230. Average assessed value of land, \$5.15. Area, 220 square miles. Railway mileage, 7. Intersected by Clinch River and bounded on the north by Powell River. Surface mountainous and partly covered with hickory, oak, maple, and chestnut timber. Fine deposits of iron, zinc, lead ore, and marble in the county. Corn, oats, wheat, live stock, and dairy products are staples. The average price of improved land is about \$20 per acre. Unimproved land can be bought at about \$5 per acre. Good inducements are offered home seekers. Maynardville, the county seat, with a population of 250, has fine schools and churches. County Immigration Bureau: W. J. Nash, President, and Neill Acuff, Secretary, Maynardville.

Washington County.—Population, 1910, 28,968; 1900, 22,604. Assessed valuation of taxable property, \$4,543,190. Average assessed value of land, \$11.70. Area, 344 square miles. Railway mileage, 56. Intersected by the Nolachucky and bounded on the northeast by the Watauga

and Holston Rivers; surface diversified with mountains and valleys; forests of hickory, chestnut, maple, oak, pine, and other timber. Iron ore and building stone are found in paying quantities. The county is intersected by the Southern Railway. Other railways are the Carolina, Clinchfield & Ohio and the East Tennessee & Western North Carolina. Jonesboro, the county seat, with a population of 800, is situated in a beautiful and fertile valley on the Southern Railway, and has excellent schools, churches, banks, an iron foundry, weekly newspaper, and several manufacturing establishments. Johnson City is another prosperous town of over 5,000 population, with up-to-date business establishments, banks, a weekly newspaper, schools, and churches. The National Soldiers' Home is located at Johnson City. County Immigration Bureau: Cy H. Lyle, President, and C. L. Marshall, Secretary, Johnson City.

MIDDLE TENNESSEE.

Bedford County.—Population, 1910, 22,667; 1900, 23,845. Assessed valuation of taxable property, \$5,428,665. Average assessed value of land in county, \$12.30. Area, 550 square miles. Railway mileage, 24. Duck River flows through this county from east to west, and it is traversed by the Nashville, Chattanooga & St. Louis Railway. The farms are in a fine state of cultivation. Shelbyville, the county seat, with a population of 3,000, is located on a branch of the N., C. & St. L. Railway. It has an electric light plant, waterworks, a cotton factory, a hub and spoke factory, a foundry, sawmills, planing mills, flouring mills and other manufacturing enterprises, and good schools and churches. It has two banks and two newspapers. Other prosperous towns in the county are Bellbuckle, Wartrace, Normandy, Flat Creek, and Unionville. Bellbuckle is noted as an educational point. Address Robert Gallagher, President, or S. P. Kirkpatrick, Secretary, Immigration Bureau, Shelbyville.

Cannon County.—Population, 1910, 10,825; 1900, 12,121. Assessed valuation of taxable property, \$1,940,890. Average assessed value of land, \$8.60. Area, 280 square miles. Railway mileage, none. Drained by numerous small streams. Surface hilly and rolling and soil very productive. Well adapted to growing apples. Corn, wheat, and live stock are the staple products. Woodbury, the county seat, with a population of 600, is 50 miles southeast of Nashville, and has schools, churches, a bank, a newspaper, and a flouring mill. Immigration Bureau: B. F. Wood, President; H. J. Doak, Secretary, Woodbury.

Cheatham County.—Population, 1910, 10,540; 1900, 10,112. Assessed valuation of taxable property, \$1,294,574. Average assessed value of land, \$5.90. Area, 400 square miles. Railway mileage, 28. Intersected by Cumberland River and drained by the Harpeth River. Surface rolling and soil generally fertile. Has a fine growth of timber. Corn, tobacco, and live stock are the staple products. Average price of improved lands is about \$20 per acre. The Nashville, Chattanooga & St. Louis and the Tennessee Central Railroads traverse the county. Ashland City, the county seat, with a population of 650, is on the Cumberland River and the Tennessee Central Railway about 20 miles from Nashville. It has a bank, a weekly newspaper, good schools, churches, and mercantile establishments. Immigration Bureau: J. A. Williams, President; P. H. Duke, Secretary, Ashland City.

Clay County.—Population, 1910, 9,009; 1900, 8,421. Assessed valuation of taxable property, \$1,325,251. Average assessed value of land, \$7.75. Area, 217 square miles. Railway mileage, none. This county borders on Kentucky, and is intersected by the Cumberland River and is drained by the Obed River. Its surface is hilly, and the soil in the valleys is very fertile. It has fine forests of beech, hickory, oak, maple, chestnut, etc. Corn, tobacco, wheat, oats, and live stock are the staple products. Celina, the county seat, with a population of 400, is situated on the Cumberland River, and has a bank, weekly newspaper, good schools and churches, and a number of prosperous mercantile establishments. S. B. Anderson, President; O. B. Maxey, Secretary, Immigration Bureau, Celina.

Coffee County.—Population, 1910, 15,625; 1900, 15,574. Assessed valuation of taxable property, \$1,997,083. Average assessed value of land, \$4.25. Area, about 350 square miles. Railway mileage, 29. This county is situated at the western base of the Cumberland Mountains, and is traversed by the Nashville, Chattanooga & St. Louis Railway. The soil is a mixture of loam and sand, with a good clay subsoil, and is easily worked. Fruits and vegetables can be produced in great abundance. Tobacco cultivation is becoming extensive. The leading staple is wheat; and corn, oats, rye, and other small grains are cultivated. The surface is level or gently undulating except along the streams, where it is a little broken. The county is well watered. Duck River has its source in this county. Manchester, the county seat, with a population of 1,200, is on the north fork of Duck River and on the Nashville, Chattanooga & St. Louis Railway. It has churches, schools, banks, waterworks, a newspaper, and prosperous mercantile establishments. Tullahoma, a prosperous town of 3,500 inhabitants, is in this county, on the main line of the N., C. & St. L. Railway, and has excellent schools and churches, numerous manufacturing industries, good newspapers, and an electric light plant. The price of improved land in this county ranges from \$10 to \$50 per acre. Address Secretary Wilson, Immigration Bureau, Manchester.

Cumberland County.—Population, 1910, 9,327; 1900, 8,311. Assessed valuation of taxable property, \$1,478,495. Average assessed value of land, \$2.50. Area, nearly 800 square miles. Railway mileage, 53. Situated centrally upon the Cumberland Plateau, at an elevation of about 2,000 feet, it is drained by the affluents of both the Cumberland and Tennessee Rivers. The surface is gently undulating, generally covered with timber, and entirely covered during nine or ten months with a luxuriant growth of native grass, which makes it one of the very best grazing counties in the State. Much of the range is free. Coal is the most valuable deposit, comprising two veins, known as the "Bon Air block vein" and the "Sewanee coking vein," than which no better coal exists. Four coal mines are in operation. The land in this county has been demonstrated by the Experiment Station to be excellently adapted to truck and fruit-growing. Irish potatoes grown in this county find a ready market at a good price. Crossville, the county seat, with a population of 1,250, is on the Tennessee Central Railroad. Its situation affords a commanding view of a wide extent of country and makes it a desirable summer resort. It has churches, schools, many flourishing stores, a bank, a weekly newspaper, and is the financial center of the rapidly developing coal and timber industries. The Masonic Coöperative Association has recently secured about 10,000 acres of land in this county, and is preparing to spend a quarter of a million dollars in improvements and in beautifying the property. The thrifty Bohemian and Swede truck farmers have seen the opportunities offered in this plateau country, and are fast settling it. Address Secretary Immigration Bureau, Crossville.

Davidson County.—Population, 1910, 149,478; 1900, 122,815. Assessed valuation of taxable property, \$76,576,600. Average assessed value of land, \$36.15. Area, 508 square miles. Railway mileage, 135. This county is intersected by the Cumberland and Stones Rivers. Its surface is gently undulating and in some sections is well timbered. The soil is fertile and well adapted to diversified agriculture. The county successfully produces sixty-seven different field crops and fifty-four varieties of garden vegetables. The conditions in the county are favorable to horticulture, and this industry is very considerable. Ten varieties of berries are successfully grown in this county and more than a dozen varieties of other fruits. The county has a fine system of free turnpikes, with a total mileage of 167. The staple products are corn, wheat, oats, grass, fruits, and live stock. The dairying industry has increased largely in the last few years, and the county is well suited to this industry. Nashville, the county seat and the capital of the State, with a population of 110,364, is located on the Cumberland River at an elevation of 460 feet. The Federal government's work on the river has made it navigable the year round from Nashville to the Ohio River be-

low and to Carthage above, a total distance of over 300 miles. The Cumberland River and the railroads—the Louisville & Nashville, the Nashville, Chattanooga & St. Louis, and the Tennessee Central—furnish excellent transportation facilities. The city has splendid streets, a fine sewerage system, and owns its own electric light plant and waterworks. It has nearly a hundred miles of electric railways and an interurban system reaching some of the towns in adjoining counties. Freight rates are as favorable as those enjoyed by any other city in the State. The wholesale trade of Nashville amounts to nearly a hundred millions yearly, and is steadily increasing. It is the largest manufacturing city in the State, its industries giving employment to many thousands of wage earners. It is one of the largest hardwood lumber markets in the United States. Its milling interests are larger than those of any other Southern city. It is one of the largest boot and shoe markets in the United States, and engages largely in the manufacture of these articles. It has three daily newspapers of wide circulation and influence, and its book and periodical publishing business is the largest of any city in the South; and it is the second largest religious publication center in the United States. Its bank clearings for 1911 show an increase of \$50,000,000 over 1910. Its public schools are of the highest grade, and a new high school building has just been completed at a cost of \$300,000. Its private schools and universities have made it famous in all the branches of education. Much good land that is well adapted to truck-raising can be secured in the vicinity of Nashville at a reasonable price. Address A. P. Foster, Secretary Industrial Bureau, or E. S. Shannon, Secretary Board of Trade, Nashville.

DeKalb County.—Population, 1910, 15,434; 1900, 16,460. Assessed valuation of taxable property, \$2,146,960. Average assessed value of land, \$7.10. Area, 310 square miles. Railway mileage, none. Intersected by the Caney Fork River, its surface is hilly in part and well covered with forests. The soil is fertile, and the staple products are corn, wheat, and live stock. The average price of improved lands is \$5 to \$15 per acre in the highlands and from \$10 to \$75 in the valleys. The price of unimproved land ranges from \$5 to \$7.50 per acre, according to location. It is a splendid fruit-growing section, and has some deposits of clay and zinc. Smithville, the county seat, with a population of 900, is 60 miles from Nashville, and has a good newspaper, bank, general stores, flouring mill, and spoke and handle factory. Alexandria is a thriving town of about 700, and has a newspaper, bank, schools, churches, and mercantile establishments. Address W. H. Davis, President, or Eugene Hendon, Secretary, Immigration Bureau, Smithville, Tenn.

Dickson County.—Population, 1910, 19,955; 1900, 18,635. Assessed valuation of taxable property, \$1,877,120. Average assessed value of land, \$4.20. Area, 620 square miles. Railway mileage, 49. Bounded on the northeast by the Cumberland River and partly drained by Harpeth River. Surface, undulating, partly covered with forests. Soil, fertile. Products, corn, wheat, tobacco, and live stock. Charlotte, the county seat, with a population of 300, is 12 miles from the N. C. & St. L. Railway; has churches, schools, and commercial establishments. Dickson, on the N. C. & St. L. Railway, is in this county, and has a population of 1,850. It has prosperous business houses, a weekly newspaper, bank, good schools. Address W. E. Cullom, President, or Pitt Hensley, Secretary, Immigration Bureau, Dickson.

Fentress County.—Population, 1910, 7,446; 1900, 6,106. Assessed valuation of taxable property, \$1,880,149. Average assessed value of land, \$5.70. Area, 510 square miles. Railway mileage, 2. This county borders on Kentucky, and is drained by Obed River. Its surface is marked by hills and high table-lands. Good opportunities are offered for investments in coal and timbered lands. The staple products are corn, wheat, and live stock. Jamestown, the county seat, with a population of 400, is 70 miles from Knoxville, and has a bank, weekly newspaper, schools, churches, and general stores. Address Secretary Immigration Bureau, Jamestown.

Franklin County.—Population, 1910, 20,491; 1900, 20,392. Assessed valuation of taxable property, \$3,555,220. Average assessed value of

land, \$6.10. Area, 570 square miles. Railway mileage, 60. This county is drained by the Elk River and numerous small streams, and its surface is hilly or table-lands, with a fine growth of timber. Tobacco can be grown with profit. Staple products are corn, wheat, and live stock. The Nashville, Chattanooga & St. Louis Railway intersects the county. Winchester, the county seat, with a population of 1,400, is on a branch of the N., C. & St. L. Railway 85 miles from Nashville, and has good schools and churches, two weekly newspapers, banks, manufacturing enterprises, and the town is surrounded by beautiful scenery. Decherd, with a population of 1,000, is another prosperous town. Address W. S. Walker, President, or H. M. Templeton, Secretary, Immigration Bureau, Winchester.

Giles County.—Population, 1910, 32,629; 1900, 33,035. Assessed valuation of taxable property, \$6,140,000. Average assessed value of land, \$10.20. Area, 656 square miles. Railway mileage, 33. Drained by Elk River and Richland Creek. This county borders on Alabama, and its surface is undulating. Many parts of the county are well timbered with oak, ash, hickory, poplar, locust, and cedar. The soil is very productive, and it is one of the few cotton-producing counties in Middle Tennessee. Corn, cotton, wheat, and live stock are the staple products. The county is intersected by the Louisville & Nashville Railroad. Pulaski, the county seat, with a population of 3,000, is on the L. & N. Railroad 81 miles from Nashville, and is a flourishing town. It has two newspapers, strong banks, fine churches and schools, and flourishing business establishments. It ships from 8,000 to 10,000 bales of cotton annually. Lynnville, with a population of 600, is another town in this county. Address N. S. White, President, Wales; or G. P. Meadows, Secretary, Good Springs, County Immigration Bureau.

Grundy County.—Population, 1910, 8,322; 1900, 7,802. Assessed valuation of taxable property, \$1,454,018. Average assessed value of land, \$1.80. Area, 325 square miles. Railway mileage, 20. This county produces an abundance of vegetables, such as potatoes, cabbage, onions, etc. It also produces hay and the grains, and is well adapted to the live stock industry. It is 1,800 feet above sea level, and the mountain part of it is 2,200 feet. The average price of land in the valleys is about \$20 per acre, and on the mountain about \$3 to \$5. There is considerable unimproved land for sale at from \$3 to \$10 per acre. There are opportunities for investment of capital in coal, timber, and agricultural lands, and good inducements are offered home seekers. Tracy City, the principal town, has a population of about 3,000, and is a mining community. It is on the line of the Nashville, Chattanooga & St. Louis Railway. A Swiss colony is located in this county, and is prospering. Altamont, the county seat, with a population of about 200, is on the Cumberland Mountains, and is about 140 miles from Nashville. Address Martin Marugg, President, or H. J. Bowers, Secretary, Immigration Bureau, Tracy City.

Hickman County.—Population, 1910, 16,527; 1900, 16,367. Assessed valuation of taxable property, \$3,149,455. Average assessed value of land, \$5.50. Area, 640 square miles. Railway mileage, 44. Intersected by Duck River. The soil is very fertile. The southwestern part of the county is well adapted to live stock raising; and Duck River Valley, in the eastern portion, produces wheat, corn, oats, and the grasses. The uplands are suited to tobacco, small grain, and fruit-growing. A large part of this county will afford cheap homes to home seekers. Some rich phosphate beds are being worked in this county, and there are fine beds of iron ore and one furnace in operation. Centreville, the county seat, has a population of 1,000, with schools, churches, banks, a weekly newspaper, and enterprising merchants. Address H. Nixon, President, or R. H. Clagett, Secretary, Immigration Bureau, Centreville.

Houston County.—Population, 1910, 6,224; 1900, 6,476. Assessed valuation of taxable property, \$871,875. Average assessed value of land, \$4.40. Area, 210 square miles. Bounded on the north by the Cumberland River and on the west by the Tennessee River. Surface hilly and soil fertile. Some good timbered land. Staple products are corn, tobacco, grass, and fruits. Traversed by the Louisville & Nashville Rail-

road. The average price of improved land is about \$10 per acre. Unimproved land can be bought from \$3 to \$5 per acre. Live stock raising offers fine inducements for capital. Erin, the county seat, with a population of 1,000, is near the Cumberland River 28 miles from Clarksville. It has schools and churches, a weekly newspaper, a wagon factory, sawmill, and mercantile establishments. Address E. G. Horn, President, or C. N. Parker, Secretary, Immigration Bureau, Erin.

Humphreys County.—Population, 1910, 13,908; 1900, 13,398. Assessed valuation of taxable property, \$2,273,450. Average assessed value of land, \$4.40. Area, 420 square miles. Railway mileage, 27. Its surface is partly hilly, but immense bodies of the richest land lie along Duck River and in the valley of the Tennessee River. In some localities forests of fine timber are found. This is the largest peanut-producing county in the State, and this industry is one of the most important in the county. Corn, wheat, and live stock are the other staple products. The Nashville, Chattanooga & St. Louis Railway traverses the county. Waverly is the county seat, with a population of 1,000. It has churches, schools, general stores, a weekly newspaper, a bank, and is the largest shipping point in the State for peanuts. McEwen is another flourishing town on the railroad, and has a population of about 700. Immigration Bureau: B. R. Thomas, President; John E. Pullen, Secretary, Waverly.

Jackson County.—Population, 1910, 15,036; 1900, 15,039. Assessed valuation of taxable property, \$1,744,475. Average assessed value of land, \$7.30. Area, 280 square miles. Railway mileage, none. Intersected by the Cumberland River. Surface hilly and well covered with timber, and its soil is fertile. The staple products are corn, wheat, grass, tobacco, and live stock. Suited for sheep- and cattle-raising, having fine pasture lands. The average price of improved land is \$15 per acre. It is a splendid county for fruit-growing. There are opportunities for investment in timber lands. Indications of coal oil in the county. Land is cheap and fertile and convenient to river and rail transportation. This county is spending \$150,000 on public roads. Gainesboro, the county seat, with a population of 500, is on the Cumberland River about 75 miles from Nashville by land. It has churches, good schools, a bank, weekly newspaper, and general stores. Immigration Bureau: W. M. Gailbreath, President; E. W. Tardy, Secretary, Gainesboro.

Lawrence County.—Population, 1910, 17,569; 1900, 15,402. Assessed valuation of taxable property, \$2,132,363. Average assessed value of land, \$2.90. Area, 676 square miles. Railway mileage, 62. Surface diversified in southern part and well timbered. North of Lawrenceburg the surface is nearly level. Price of improved land varies from \$5 to \$40 per acre. Unimproved land can be bought from \$2.50 to \$5 per acre. Large areas are suitable for grazing, and the sheep industry is growing. Good deposits of iron ore and phosphate are found in the county. Farms can be bought on very reasonable terms. Staple products are corn, wheat, cotton, grass, and live stock. Lawrenceburg, the county seat, with a population of 1,700, is on the Louisville & Nashville Railroad 74 miles from Nashville. It has fine churches, schools, a good electric light system, bank, weekly newspaper, and manufacturing and commercial enterprises. Immigration Bureau: F. M. Lincoln, President; J. Sims, Secretary, Lawrenceburg.

Lewis County.—Population, 1910, 6,033; 1900, 4,445. Assessed valuation of taxable property, \$1,007,019. Average assessed value of land, \$4.50. Area, 280 square miles. Railway mileage, 34. Surface uneven and hilly, with a fine growth of timber. Intersected by the Nashville, Chattanooga & St. Louis Railway. Staple products are peanuts, corn, wheat, oats, grass, and live stock. Iron ore, oxide of iron, and ocher are found in the county. Wheat-growing is on the increase. Hohenwald, the county seat, with a population of 900, has a weekly newspaper, fine schools and churches, and flourishing mercantile establishments. Immigration Bureau: G. Smethurst, President; W. W. O'Guin, Secretary, Hohenwald.

Lincoln County.—Population, 1910, 25,908; 1900, 26,304. Assessed valuation of taxable property, \$6,074,805. Average assessed value of land, \$11.40. Area, 540 square miles. Railway mileage, 56. Surface diversified by numerous ridges and valleys. Elk River divides the county. Soil is fertile. Good growth and variety of timber. The Nashville, Chattanooga & St. Louis Railway traverses the county. Cotton is one of the staples. Leading crops are corn, wheat, and grass. Live stock industry is on the increase. Fayetteville, the county seat, with a population of 2,500, is on the railway, and has a good electric light plant, waterworks system, good schools, churches, and newspapers. Immigration Bureau: John T. Goodrich, President; I. G. McCalla, Secretary, Fayetteville.

Macon County.—Population, 1910, 14,559; 1900, 12,881. Assessed valuation of taxable property, \$1,441,880. Average assessed value of land, \$6.70. Area, 450 square miles. Railway mileage, none. Drained by tributaries of Cumberland and Big Barren Rivers. Its surface is generally uneven and covered with forests. Staple products are corn, wheat, tobacco, and live stock. Good gardening and truck-growing section. La Fayette, the county seat, with a population of 700, is 30 miles from Gallatin, and has churches, schools, a weekly newspaper, flour mill, and general stores. Immigration Bureau: W. C. Gregory, President; J. L. Holland, Secretary, La Fayette.

Marshall County.—Population, 1910, 16,872; 1900, 18,763. Assessed valuation of taxable property, \$3,701,590. Average assessed value of land, \$11.40. Area, 377 square miles. Railway mileage, 22. Duck River flows through the county. Northern part of the county is generally level; southern portion hilly, with valleys that are fertile. Staple products are corn, oats, wheat, fruits, and live stock. A branch of the N., C. & St. L. Railway passes through the county. Improved lands can be bought for \$15 to \$20 per acre. Lewisburg, the county seat, has a population of about 1,900, and has good schools, churches, a bank, a weekly newspaper, and manufacturing and commercial enterprises. Immigration Bureau: G. W. Ewing, President; J. J. Murray, Secretary, Lewisburg, Tenn.

Maury County.—Population, 1910, 40,456; 1900, 42,703. Assessed valuation of taxable property, \$11,283,975. Average assessed value of land, \$16.50. Area, 596 square miles. Railway mileage, 74. Duck River intersects the county. It is traversed by the L. & N. Railroad and the N., C. & St. L. Railway. The land is very fertile, and it is one of the richest agricultural counties in the State. Its dairy interests are great, and it is one of the largest mule markets of the South. There are immense phosphate deposits in the county of the highest per cent, and it is the center of the phosphate-mining industry of the South. Columbia, the county seat, has a population of about 7,000, and is located on Duck River and the railroads. It has all the conveniences of a modern city, a daily and weekly papers, fine public and private schools, and a large manufacturing and mercantile interest. Mt. Pleasant, the center of the phosphate region, has a population of about 2,000, with schools, churches, banks, and a weekly newspaper. Immigration Bureau: Joe Dedman, President; J. I. Finney, Secretary, Columbia.

Montgomery County.—Population, 1910, 33,672; 1900, 36,017. Assessed valuation of taxable property, \$7,197,320. Average assessed value of land, \$9.68. Area, 540 square miles. Railway mileage, 83. Borders on Kentucky, and is intersected by the Cumberland River. Its surface is undulating and partly timbered. Its soil is fertile, and it is one of the best tobacco-growing counties in the State. There are fine limestone and iron ore deposits in the county. The staple products are tobacco, corn, wheat, oats, and live stock. The county is traversed by the Louisville & Nashville and the Tennessee Central Railroads. Clarksville, the county seat, has a population of about 9,500, and is on the Cumberland River and railroads. It is an up-to-date city, with all conveniences, and has fine schools and churches, a daily newspaper, and is one of the largest tobacco markets in the United States. Immigration Bureau: C. E. Frey, President; Harvey Whitfield, Secretary, Clarksville.

Moore County.—Population, 1910, 4,800; 1900, 5,706. Assessed valuation of taxable property, \$773,558. Average assessed value of land, \$7.10. Area, 170 square miles. Railway mileage, none. It is drained by Elk River, and its surface is hilly and partly covered with timber. Its soil is fertile, and the principal products are corn, oats, and live stock. Lynchburg, the county seat, has a population of 500, and has schools, churches, a weekly newspaper, bank, and general stores. It is noted as a mule market. Immigration Bureau: L. F. Edens, President; J. J. Bean, Secretary, Lynchburg.

Overton County.—Population, 1910, 15,584; 1900, 13,353. Assessed valuation of taxable property, \$1,268,558. Average assessed value of land, \$3.65. Area, 376 square miles. Railway mileage, 30. Drained by Obed River. Its surface is hilly and its soil very fertile. There are fine grazing lands for cattle and sheep. The county is well timbered. Coal is found in paying quantities. Livingston, the county seat, has a population of 1,500, and has a weekly newspaper, banks, schools, churches, mills, and several enterprising manufacturing establishments and stores. Immigration Bureau: Robert Poston, President; W. J. Chilton, Secretary, Livingston.

Perry County.—Population, 1910, 8,815; 1900, 8,800. Assessed valuation of taxable property, \$1,098,840. Average assessed value of land, \$2.90. Area, 420 square miles. Railway mileage, none. Bounded on the west by the Tennessee River, and drained by Buffalo River. Surface diversified by high ridges and rich valleys, and portions of it well timbered. It is a large peanut-growing county. Other products are corn, wheat, buckwheat, and live stock. Linden, the county seat, has a population of 400, and is 13 miles from the Tennessee River and 80 miles from Nashville. It has churches and schools, a weekly newspaper, and general stores. Address Secretary Immigration Bureau, Linden.

Pickett County.—Population, 1910, 5,087; 1900, 5,366. Assessed valuation of taxable property, \$718,950. Average assessed value of land, \$6.30. Area, 240 square miles. Railway mileage, none. Borders on Kentucky. Its surface is hilly, and it is well watered by Obed and Wolf Rivers. Some sections are well covered with a fine growth of timber. Staple products are corn, wheat, oats, grass, and live stock. Byrdstown, the county seat, has a population of 200, and has schools, churches, and general stores. Address Secretary Immigration Bureau, Byrdstown.

Putnam County.—Population, 1910, 20,023; 1900, 16,890. Assessed valuation of taxable property, \$2,404,910. Average assessed value of land, \$5.70. Area, 430 square miles. Railway mileage, 50. Its surface is undulating and partly covered with fine timber. The soil is moderately fertile, and the county is well adapted to stock-raising and fruit-growing. Corn, grass, and live stock are the staple products. Fine coal deposits are found in this county. The Tennessee Central Railroad traverses this county, which has a fine system of pikes. Cookeville, the county seat, has a population of about 2,000, and has an electric lighting plant and waterworks, two weekly newspapers, two banks, several manufacturing industries, and fine schools and churches. A large Church institution of learning is being built at this place. Monterey, another thriving town on top of the mountain, has a population of 1,200, and is the center of the spoke and handle and stave industry for a large section. Immigration Bureau: A. W. Boyd, President; D. H. Morgan, Secretary, Cookeville.

Robertson County.—Population, 1910, 25,466; 1900, 25,029. Assessed valuation of taxable property, \$4,598,970. Average assessed value of land, \$9.75. Area, 536 square miles. Railway mileage, 26. Surface hilly and well covered with forests. Soil fertile. Tobacco is one of the largest products. Corn, wheat, and live stock are also staples. The Louisville & Nashville Railroad traverses the county. Springfield, the county seat, has a population of 2,100, and is on the L. & N. Railroad about 30 miles from Nashville. It has fine schools, churches, and is one of the largest tobacco markets in the State. It has also banks and weekly newspapers. Bureau of Immigration: Neel Glenn, President; H. H. Mason, Secretary, Springfield.

Rutherford County.—Population, 1910, 33,199; 1900, 33,543. Assessed valuation of taxable property, \$7,499,200. Average assessed value of land, \$12.20. Area, 580 square miles. Railway mileage, 32. Drained by Stones River. Its surface is undulating, and the soil is fertile. Portions of the county are well timbered. The average price of improved land ranges from \$25 to \$40 per acre; unimproved land, from \$10 to \$20. Staple products are corn, cotton, wheat, sorghum, peas, clover, and grass. The live stock industry is important. Murfreesboro, the county seat, has a population of 4,700, and is on the N., C. & St. L. Railway 30 miles from Nashville. It has splendid churches and fine public and private schools. The Middle Tennessee Normal School is located at this place. There are important manufacturing industries, two weekly newspapers, banks, and flourishing mercantile establishments. Immigration Bureau: J. H. Crichlow, Secretary, Murfreesboro, Tenn.

Smith County.—Population, 1910, 18,548; 1900, 19,026. Assessed valuation of taxable property, \$4,619,570. Average assessed value of land, \$16.70. Area, 368 square miles. Railway mileage, 27. It is intersected by the Cumberland River and drained by that and the Caney Fork. Its surface is hilly and well covered with timber. It is traversed by the Tennessee Central Railroad. The staple products are corn, wheat, oats, tobacco, and live stock. There are good grazing lands for cattle. Carthage, the county seat, has a population of 1,000, and is on the Cumberland River and at the mouth of the Caney Fork. A branch of the Tennessee Central Railroad reaches the town. Large shipments of tobacco are made from Carthage. It has churches, schools, general stores, a bank, and a weekly newspaper. Bureau of Immigration: L. A. Ligon, President; T. B. Read, Secretary, Carthage.

Stewart County.—Population, 1910, 14,860; 1900, 15,224. Assessed valuation of taxable property, \$1,921,270. Average assessed value of land, \$5.45. Area, 500 square miles. Railway mileage, 16. This county borders on Kentucky, and is intersected by the Cumberland River. The Tennessee River flows along its western border. Its surface is hilly and partly covered with a growth of timber. Its soil is fertile, and it grows a large amount of export tobacco. Wheat, oats, and live stock are the other staples. There are several iron mines worked. The Louisville & Nashville Railroad intersects the county. Dover, the county seat, has a population of 400, and is located 63 miles from Nashville. It has schools, churches, a weekly newspaper, and several stores. Immigration Bureau: S. C. Lewis, President; H. B. Stout, Secretary, Dover.

Sumner County.—Population, 1910, 25,621; 1900, 26,072. Assessed valuation of taxable property, \$5,152,570. Average assessed value of land, \$10. Area, 536 square miles. Railway mileage, 62. This is one of the finest stock-raising and agricultural counties in the State, and is traversed by the Louisville & Nashville Railroad. It borders on Kentucky, and is bounded on the south by the Cumberland River. Portions of it are well timbered, and it is a fine county for fruit-growing. There are large deposits of phosphate rock. There is a good system of turnpikes, and the county has recently voted a bond issue to buy the pikes and make them free. The average price of improved land is about \$40 per acre. Gallatin, the county seat, has a population of 2,400, and is on the Louisville & Nashville Railroad 30 miles from Nashville. It has fine public and private schools, splendid churches, newspapers, banks, and large manufacturing and mercantile establishments. It is a fine poultry market. Bureau of Immigration: Harris Brown, President; W. G. Schamberger, Secretary, Gallatin.

Trousdale County.—Population, 1910, 5,874; 1900, 6,004. Assessed valuation of taxable property, \$1,435,831. Average assessed value of land, \$16.80. Area, 166 square miles. Railway mileage, 8. This county is bounded on the south by the Cumberland River, and is hilly, with rich valleys. It is a splendid stock-raising county. Wheat, hay, corn, oats, fruit, tobacco, and live stock are the staple products. Hartsville, the county seat, has a population of 1,000, and is on a branch of the Louisville & Nashville Railroad. It has good churches, schools, and general stores. Bureau of Immigration: W. V. Hager, President; C. A. Gwin, Secretary, Hartsville.

Van Buren County.—Population, 1910, 2,784; 1900, 3,126. Assessed valuation of taxable property, \$674,262. Average assessed value of land, \$2.90. Area, 322 square miles. Railway mileage, none. This county is well drained, and has much timber and fine grazing lands for cattle and sheep. The staple products are corn, grass, fruit, honey, ginseng, and live stock. Spencer, the county seat, with a population of 200, has good schools, churches, and general stores. Address Secretary Immigration Bureau, Spencer.

Warren County.—Population, 1910, 16,534; 1900, 16,410. Assessed valuation of taxable property, \$2,574,660. Average assessed value of land, \$6. Area, 440 square miles. This county is drained by the Caney Fork and Rock Rivers, and its surface is hilly, with the valleys very fertile. It is a splendid fruit-growing section, apples growing to a fine state of perfection. Some sections are well timbered. Corn, wheat, oats, and live stock are the staple products. The Nashville, Chattanooga & St. Louis Railway intersects the county. McMinnville, the county seat, has a population of 2,300, and is located on the railroad. It has churches and schools, weekly newspapers, flour mills, sawmill, bank, and a number of prosperous manufacturing and commercial enterprises. Immigration Bureau: W. A. Caldwell, Secretary, McMinnville.

Wayne County.—Population, 1910, 12,062; 1900, 12,936. Assessed valuation of taxable property, \$1,826,590. Average assessed value of land, \$2.80. Area, 720 square miles. Railway mileage, 2. It is drained by Buffalo, Beech, and Cypress Creeks, and its surface is generally hilly. It is a splendid fruit-growing county. A large part of the county is well timbered. Limestone and iron are found in paying quantities. Staple products are cotton, corn, wheat, and live stock. Waynesboro, the county seat, has a population of 400, and has good schools, churches, and flourishing commercial enterprises. Address Secretary Immigration Bureau, Waynesboro.

White County.—Population, 1910, 15,420; 1900, 14,157. Assessed valuation of taxable property, \$2,128,459. Average assessed value of land, \$5. Area, 390 square miles. Railway mileage, 36. Drained by the Caney Fork River. The surface is uneven and extensively covered with timber of good variety. The soil is fertile, and the staple products are corn, wheat, oats, and live stock. It is a good fruit-growing section. The Bon Air coal mines are located in this county. The county is traversed by the Nashville, Chattanooga & St. Louis Railway. Sparta, the county seat, is located on a branch of the N., C. & St. L. Railway, at the base of the Cumberland Mountains. It has churches, schools, weekly newspapers, an electric light and power plant, banks, prosperous manufacturing and commercial enterprises. Immigration Bureau, Harris Hatcher, Secretary, Sparta.

Williamson County.—Population, 1910, 24,213; 1900, 26,249. Assessed valuation of taxable property, \$7,016,685. Average assessed value of land, \$13.30. Area, 550 square miles. Railway mileage, 33. This county is drained by the Harpeth River, and its surface is hilly and the soil very fertile. It has a fine growth of timber. Wheat, corn, oats, cotton, and live stock are staple products. Franklin, the county seat, has a population of 2,700, and is a progressive town with good churches, public and private schools, two newspapers, and several manufacturing enterprises. Extensive deposits of phosphate are found in this county. Immigration Bureau: H. D. Jefferson, President; L. W. Buford, Secretary, Franklin.

Wilson County.—Population, 1910, 25,394; 1900, 27,078. Assessed valuation of taxable property, \$6,308,740. Average assessed value of land, \$11.40. Area, 536 square miles. Railway mileage, 55. This county is bounded on the north by the Cumberland River. It is one of the best live stock counties in the State. Staple products are wheat, corn, oats, hay, tobacco, butter, and live stock. The county is traversed by the Nashville, Chattanooga & St. Louis Railway and the Tennessee Central Railroad. Lebanon, the county seat, has a population of about 3,000, and is located on both railroads. It is the seat of Cumberland University, one of the leading educational institutions of the South, and has good public schools. A fine training school for boys is also located

here, as well as a fine seminary for the training and education of young ladies. It has two newspapers, numerous business houses, banks, manufacturing establishments, and an electric light plant. Immigration Bureau, R. Q. Lillard, Secretary, Lebanon.

WEST TENNESSEE.

Benton County.—Population, 1910, 12,452; 1900, 11,888. Assessed valuation of taxable property, \$1,456,210. Average assessed value of land, \$4.17. Area, 412 square miles. Railway mileage, 26. This county is bounded on the east by the Tennessee River. Portions of the county are well timbered. The surface is level and generally fertile. This is one of the peanut-growing counties of the State, and other products are corn, wheat, oats, vegetables, and live stock. The county is intersected by the Nashville, Chattanooga & St. Louis Railway. Camden, the county seat, has a population of 700, and is on the Nashville, Chattanooga & St. Louis Railway. It has good schools, churches, a weekly newspaper, and a number of flourishing mercantile establishments and a bank. Information will be furnished by G. M. Leslie, Immigration Bureau, Camden.

Carroll County.—Population, 1910, 23,971; 1900, 24,250. Assessed valuation of taxable property, \$3,608,535. Average assessed value of land, \$6.19. Area, 600 square miles. Railway mileage, 68. Drained by the Big Sandy and Obion Rivers. Surface generally level, and there is considerable timber. Corn, cotton, wheat, fruits, and hogs are the staple products. Fruit-growing and poultry-raising are profitable industries. Huntingdon, the county seat, has a population of 1,500, and is on the N., C. & St. L. Railway. The town has good public and private schools, two newspapers, waterworks, electric lights, good churches, and flourishing manufacturing and commercial establishments. McKenzie, another flourishing town, is on the Nashville, Chattanooga & St. Louis Railway and the Louisville & Nashville Railroad, and is noted for its schools. It has a bank, a weekly newspaper, and numerous mercantile establishments. Truck-growing is largely and profitably engaged in in Carroll County. Information will be furnished by Garver & Garver, Huntingdon.

Chester County.—Population, 1910, 9,090; 1900, 9,896. Assessed valuation of taxable property, \$1,279,990. Average assessed value of land, \$5.30. Area, 288 square miles. Railway mileage, 10. This county is on the highlands of West Tennessee, and is drained by the Forked Deer River and intersected by the Mobile & Ohio Railroad. The soil is sandy and very fertile. Cotton is the leading staple, but other crops are profitably grown. Henderson, the county seat, is on the Mobile & Ohio Railroad, and has a population of 1,100. It has a weekly newspaper, banks, splendid schools and churches, several manufacturing establishments, and prosperous stores. Information will be furnished by J. T. Rogers, County Immigration Bureau, Chester.

Crockett County.—Population, 1910, 16,076; 1900, 15,867. Assessed valuation of taxable property, \$2,024,040. Average assessed value of land, \$9.40. Area, 275 square miles. Railway mileage, 12. Drained by the Forked Deer River and well timbered in portions of the county. The soil in the eastern portion is sandy loam and clay and well adapted to the growing of vegetables and fruits. The western portion is level and rich, and is well adapted to the growing of wheat, corn, potatoes, and grasses. Alamo, the county seat, has a population of 500, and is six miles from the L. & N. Railroad. It has a weekly newspaper, a bank, churches, schools, and several manufacturing establishments. Bells, the largest town in the county, has a population of 800, and is 70 miles from Memphis on the L. & N. Railroad. It has schools, churches, a newspaper, stores, and manufacturing establishments. Other towns are Gadsden, Crockett Mills, and Maury City. Information will be furnished by Alamo Real Estate and Trust Company, Alamo.

Decatur County.—Population, 1910, 10,093; 1900, 10,439. Assessed valuation of taxable property, \$1,096,700. Average assessed value of land, \$4.10. Area, 310 square miles. Railway mileage, 11. Bounded on the east and south by the Tennessee River, the surface is comparative-

ly level and is covered with a fine growth of timber. Fine iron ore is found in this county. Phosphate deposits are also found, as are marble and granite. Corn, cotton, and hogs are staple products. Decaturville, the county seat, has a population of 400, and is five miles from the Tennessee River and the same distance from the N. C. & St. L. Railway. It has churches, schools, stores, a weekly newspaper, and a bank. Parsons is the principal business point in the county on the railroad. Information will be furnished by County Immigration Bureau, Decaturville.

Dyer County.—Population, 1910, 27,721; 1900, 23,776. Assessed valuation of taxable property, \$5,674,775. Average assessed value of land, \$11.90. Area, 495 square miles. Railway mileage, 58. This county is bounded on the west by the Mississippi River, and is well watered by smaller streams. It is hilly, rolling, and level, and is one of the most fertile counties in the State. It is well adapted to the growth of cotton, cereals, and other crops. The Illinois Central Railroad runs through the county. Staple products are cotton, corn, wheat, potatoes, hay, lumber, and live stock. Dyersburg, the county seat, has a population of 4,200, and is on the Forked Deer River and the railroad, 76 miles north of Memphis. It is a manufacturing town, and has good churches and schools, banks, weekly newspapers, and is a growing town. Information will be furnished by Dyer County Realty Co., Dyersburg.

Fayette County.—Population, 1910, 30,257; 1900, 29,701. Assessed valuation of taxable property, \$3,627,003. Average assessed value of land, \$6.60. Area, 630 square miles. Railway mileage, 80. This county borders on the State of Mississippi, and the surface is generally level and in many localities well timbered. Cotton is the leading product of the county, but it is well adapted to the growth of fruits and berries. It is a large producer of strawberries. Cotton, corn, fruit, and live stock are the staple products. The Nashville, Chattanooga & St. Louis Railway, the Southern, and the Louisville & Nashville Railroads traverse the county. Somerville, the county seat, has a population of 1,400, and is on the Loosahatchie River. It has fine schools and churches, a weekly newspaper, bank, and commercial establishments, and is surrounded by rich cotton plantations. Information will be furnished by County Immigration Bureau, Somerville.

Gibson County.—Population, 1910, 41,630; 1900, 39,408. Assessed valuation of taxable property, \$8,085,625. Average assessed value of land, \$13.10. Area, 615 square miles. Railway mileage, 71. Drained by the Obion and Forked Deer Rivers. Its surface is generally level and its soil very fertile. It has a plentiful supply of timber. The shipping facilities of the county are excellent. Cotton, corn, wheat, grass, fruits, vegetables, and hogs are the staple products. Trenton, the county seat, has a population of 2,500, and is on the Forked Deer River and Mobile & Ohio Railroad. It has a number of manufacturing establishments, a weekly newspaper, good schools and churches, banks, and mercantile establishments. Humboldt, another prosperous town, has a population of 3,500, is the center of the truck-growing industry of West Tennessee, and is also a manufacturing town, with excellent school facilities, churches, a bank, weekly newspaper, and flourishing mercantile establishments. It is at the junction of the Mobile & Ohio and Louisville & Nashville Railroads. Milan, another prosperous town, has a population of 1,700. It is at the junction of the Illinois Central and Louisville & Nashville Railroads, and is a vegetable and fruit shipping point. Other prosperous towns in this county are Dyer, Fruitland, Rutherford, and Medina. For information address G. W. Wade, County Immigration Bureau, Trenton.

Hardeman County.—Population, 1910, 23,011; 1900, 22,976. Assessed valuation of taxable property, \$2,999,773. Average assessed value of land, \$4.95. Area, 640 square miles. Railway mileage, 73. This county borders on Mississippi, and is drained by the Big Hatchie River. Its surface is nearly level and in many sections covered with fine timber. The soil is fertile, and it is one of the best cotton-producing counties in the State. Other staples are corn, hay, and timber. The county is traversed by the Illinois Central, the Southern, and the Nashville,

Chattanooga & St. Louis Railroads. Bolivar, the county seat, has a population of 1,100, and is on the Big Hatchie River and the Illinois Central Railroad 18 miles south of Jackson. It has good schools and churches, a weekly newspaper, and banks. For information address County Immigration Bureau, Bolivar.

Hardin County.—Population, 1910, 17,521; 1900, 19,246. Assessed valuation of taxable property, \$2,490,105. Average assessed value of land, \$5.25. Area, 587 square miles. Railway mileage, none. This county borders on Alabama and Mississippi, and is intersected by the Tennessee River, which passes through the county and is navigable the year round. The western portion is generally level, while the eastern portion is hilly, with fertile valleys. The eastern part is well timbered. The staple products are cotton, corn, and live stock. Savannah, the county seat, has a population of 1,800, and has excellent public and private schools, churches, and mercantile establishments and a weekly newspaper. Congress has established a national park at Shiloh, the scene of a bloody battle during the Civil War. Information will be furnished by County Immigration Bureau, Savannah.

Haywood County.—Population, 1910, 25,910; 1900, 25,189. Assessed valuation of taxable property, \$3,384,122. Average assessed value of land, \$7.30. Area, 570 square miles. Railway mileage, 29. Drained by the Hatchie and Forked Deer Rivers. The surface is nearly level, with an abundant supply of timber. The soil is fertile and capable of great diversification of crops. Fruit-growing is a profitable business. The staple products are cotton, corn, fruit, grass, and live stock. The Louisville & Nashville Railroad passes through the county. Brownsville, the county seat, has a population of 3,000, and is 56 miles from Memphis, on the Louisville & Nashville Railroad. It has splendid schools and churches and many manufacturing establishments, two weekly newspapers, and good banks. It is an important shipping point for cotton. For information address George A. Chamberlain, County Immigration Bureau, Brownsville.

Henderson County.—Population, 1910, 17,030; 1900, 18,117. Assessed valuation of taxable property, \$1,952,760. Average assessed value of land, \$4.60. Area, 530 square miles. Railway mileage, 42. It is drained by tributaries of the Tennessee River, and the surface is generally level, well timbered in some portions. The soil is very fertile in the valleys and river bottoms. Cotton is a leading product, and corn, grass, and live stock are also staple products. Lexington, the county seat, has a population of 1,500, and is on the Nashville, Chattanooga & St. Louis Railway, which traverses the county. It has good schools and churches, newspapers, an electric light plant, stave factory, and a number of prosperous stores. Information will be furnished by A. S. Stanford, County Immigration Bureau, Lexington.

Henry County.—Population, 1910, 25,432; 1900, 24,208. Assessed valuation of taxable property, \$4,054,660. Average assessed value of land, \$7.10. Area, 580 square miles. Railway mileage, 60. This county borders Kentucky, and is bounded on the east by the Tennessee River. The surface is generally level, and has fine timber in some localities. Crops that grow well are cotton, corn, peanuts, wheat, oats, sweet and Irish potatoes, and it is also well adapted to the growing of vegetables and all the small fruits. It is a live stock county, and large shipments are made. The poultry business is also profitable. Tobacco is also grown. The county is intersected by the Louisville & Nashville and the Nashville, Chattanooga & St. Louis Railways. Paris, the county seat, has a population of 4,000, and has first-class public and private schools, two newspapers, banks, manufacturing establishments, and flourishing mercantile business. It has an electric light plant and waterworks. For further information address S. J. Routon, Immigration Bureau, Paris.

Lake County.—Population, 1910, 8,704; 1900, 7,368. Assessed valuation of taxable property, \$2,098,334. Average assessed value of land, \$16.30. Area, 210 square miles. Railway mileage, 13. This county is bounded on the north by Kentucky, on the west by the Mississippi River, and on the east by Reelfoot Lake. A fine growth of timber is found

in this section. The soil in the county is very rich, and the staple products are cotton, corn, and hogs. Tiptonville, the county seat, on the Mississippi River, has a population of 900, and has churches, schools, a newspaper, and general stores. Address Immigration Bureau, Tiptonville.

Lauderdale County.—Population, 1910, 21,105; 1900, 21,971. Assessed valuation of taxable property, \$4,593,311. Average assessed value of land, \$10.08. Area, 450 square miles. Railway mileage, 26. Bounded on the west by the Mississippi River and drained by smaller streams, the surface is nearly level, with a good growth of timber. The soil is very fertile, and it is a large cotton-producing county. Other staple products are corn, fruit, and live stock. The Illinois Central Railroad passes through the county. Ripley, the county seat, with a population of 2,100, is on the I. C. Railroad, 56 miles from Memphis. It has good churches, schools, weekly newspapers, banks, and general stores. For further information address A. J. Hatcheson, Ripley.

Madison County.—Population, 1910, 39,357; 1900, 36,333. Assessed valuation of taxable property, \$7,069,471. Average assessed value of land, \$7.30. Area, 520 square miles. Railway mileage, 90. Its surface is generally level, and it is intersected by the Forked Deer River. The soil is very fertile; and the staple products are corn, cotton, fruits, vegetables, and live stock. The Illinois Central, the Mobile & Ohio, and the Nashville, Chattanooga & St. Louis Railroads traverse the county. A large cotton-manufacturing establishment is located at Bemis. Jackson, the county seat, has a population of 16,000 and all the conveniences that go to make a modern city. An artesian waterworks system, owned by the city, supplies the residents with pure water. Jackson has fine public and private schools, and is noted as an educational center. It has enterprising daily and weekly newspapers and other periodicals. Address Commercial Association, Jackson.

McNairy County.—Population, 1910, 16,356; 1900, 17,760. Assessed valuation of taxable property, \$1,792,664. Average assessed value of land, \$4.10. Area, 550 square miles. Railway mileage, 42. Drained by the Hatchie River and affluents of the Tennessee. Part of the county is level, and in some portions there is a fine growth of timber. The staple products are cotton, corn, and hogs. The Mobile & Ohio and the Southern Railway traverse the county. Selmer, the county seat, is on the M. & O. Railroad, 35 miles south of Jackson. It has a bank, weekly newspapers, good schools and churches, manufacturing and mercantile establishments. Adamsville and Stantonville are other towns in the county. Address William Lea, Immigration Bureau, Selmer.

Obion County.—Population, 1910, 29,946; 1900, 28,286. Assessed valuation of taxable property, \$8,468,459. Average assessed value of land, \$16.50. Area, 540 square miles. This county is bounded on the north by Kentucky and on the west by Reelfoot Lake, and is one of the richest agricultural counties in the State. Its surface is nearly level, and there is a plentiful supply of timber. The soil is rich and fertile, and wheat, corn, oats, cotton, and live stock are the staple products. It is one of the best wheat-producing counties in the State. It is intersected by the Illinois Central, the Mobile & Ohio, and the Nashville, Chattanooga & St. Louis Railroads. Union City, the county seat, has a population of about 4,500, and is located at the junction of these railroads. It has splendid churches, good schools, banks, weekly newspapers, lumber mills, railroad shops, and other manufacturing establishments. For further information address Carter & White, Union City.

Shelby County.—Population, 1910, 191,439; 1900, 153,557. Assessed valuation of taxable property, \$82,244,022. Average assessed value of land, \$24.80. Area, 728 square miles. Railway mileage, 208. This county is bounded on the west by the Mississippi River, on the south by the State of Mississippi, and is intersected by the Loosahatchie and Wolf Rivers. Its surface is level, and portions are well timbered. The soil is very rich and fertile, and it is one of the best cotton-producing counties in the State. The staple products are cotton, corn, lumber, and hogs. Market-gardening is carried on extensively. Memphis, the county seat and the largest city in the State, has a population of 131,105, is

located on the Mississippi River, and numerous railroads enter the city. A fine bridge crosses the Mississippi at this point. It has an excellent system of streets and sewers. It is a great manufacturing city, and its shipping facilities have made it one of the most important marts in the United States. It is the leading cotton market of the South, and is also a leading lumber market and a central market for mules and horses. It is the center of the cotton seed oil industry in the South and the largest cotton seed oil market in the world. It is a rapidly growing city, and its importance as a manufacturing and distributing point is growing. The West Tennessee Normal School is located at this point, and the city and county made large donations for its establishment. Address Business Men's Club, Memphis.

Tipton County.—Population, 1910, 29,459; 1900, 29,273. Assessed valuation of taxable property, \$3,053,240. Average assessed value of land, \$7.90. Area, 400 square miles. Railway mileage, 27. This county is bounded on the west by the Mississippi River, and the surface is level except for a range of hills near the river. The county is well timbered, and it is well watered by running streams and artesian wells. The soil is rich; and cotton, corn, wheat, oats, fruits, vegetables, and live stock are the products. The Louisville & Nashville and the Illinois Central Railroads traverse the county. Covington, the county seat, has a population of 2,000, and is 38 miles from Memphis on the I. C. Railroad. It has fine churches, banks, two weekly newspapers, electric lights, waterworks, a cotton mill, cotton seed oil mill, and other manufacturing enterprises, and is a live, progressive town. Address W. F. Bringle, County Immigration Bureau, Covington.

Weakley County.—Population, 1910, 31,929; 1900, 32,546. Assessed valuation of taxable property, \$6,576,247. Average assessed value of land, \$11.60. Area, 620 square miles. Railway mileage, 51. This county is intersected by the Obion River, and the surface is generally level, with a good growth of timber in some portions. The soil is very fertile, and the staple products are cotton, tobacco, corn, wheat, oats, fruits, vegetables, and live stock. The Nashville, Chattanooga & St. Louis Railway and the Illinois Central Railroad traverse the county. Dresden, the county seat, with a population of 800, has good schools, churches, lumber mills, a stave factory, a tannery, a bank, and a weekly newspaper. Martin, another prosperous town, has a population of 2,300, and is located at the junction of the railroads. It has many business establishments, good schools and churches, manufacturing establishments, and newspapers. Address M. D. Brassfield, County Immigration Bureau, Dresden, Tenn.

FACTS WORTH KNOWING.

The population of Tennessee averages 52 to the square mile.

The taxable property of the State is about \$500,000,000. The State debt is about \$11,500,000. The State tax rate is 35 cents on \$100. The State's income is about \$3,700,000.

Value of all farm property, 1910, including domestic animals, \$612,520,836.

Value of domestic animals, poultry, and bees, 1910, \$110,706,078.

Value of farm products, 1912, \$125,000,000.

Value of manufactured products in 1910, \$137,960,000.

Value of timber products in 1905, \$26,000,000.

Value of mineral products in 1910, \$20,000,000.

Tennessee touches eight other States, and possesses the combined attractions of all the eight.

Marble is found in all the grand divisions of the State.

Tennessee's rank among the States in population is seventeenth.

Blue grass grows spontaneously on Tennessee limestone lands.

Two crops of potatoes can be grown on the same land the same year, and the production per acre is from 100 to 300 bushels.

A crop of wheat and a crop of corn may be harvested from the same land the same year.

Crop productions of Northern and Southern States meet and overlap in Tennessee.

It is worthy of note that every crop scheduled in the Federal census is grown to some extent in Tennessee.

The elevated plateaus of the State are excellently adapted to fruit culture.

Corn is Tennessee's greatest crop and exceeds in value all others.

Truck farmers have cleared as high as \$500 per acre on lands in West Tennessee.

There is a difference in elevation, from the high mountains of East Tennessee to the alluvial plains of the Mississippi, of over 6,000 feet.

Tennessee offers unlimited supplies of raw material of all kinds to the manufacturer.

In the production of phosphate rock Tennessee ranks second, standing next to Florida.

Extensive areas of valuable clay deposits are found in Tennessee.

A Tennessee steer won first prize at the international stock show held in Chicago several years ago.

A fleece from a Tennessee sheep won first prize in a world competition at London.

Fruits of every kind common to the temperate zone thrive in Tennessee.

INDUCEMENTS TO IMMIGRANTS.

It is the best country for the man of moderate means.

There is a certainty of profitable returns from whatever is put into the soil.

There are more and better opportunities for diversified farming than elsewhere.

The seasons are regular, the rainfall ample and well distributed, and there is no fear of crop failure.

Truck-farming is a success. Products, being early on the market, obtain high prices.

There are more chances for profitable investment of capital than elsewhere in the country.

Happiness, comfort, and health await home seekers in Tennessee, whose citizens gladly welcome newcomers to a region of schools, churches, social advantages, and good neighbors.

Good farming lands can be purchased at low prices—lands capable of high cultivation, and producing, under right treatment and by diversification, two, three, and sometimes four crops a year.

TENNESSEE STATE BOARD OF ENTOMOLOGY

SEVENTH ANNUAL REPORT

OF THE

STATE ENTOMOLOGIST AND PLANT
PATHOLOGIST FOR
1911



KNOXVILLE, TENNESSEE

1912

Tennessee State Board of Entomology

T. F. PECK, Commissioner of Agriculture.....*Chairman*
Nashville

G. M. BENTLEY, State Entomologist and Plant Pathologist,
Secretary, Knoxville

All communications should be addressed to the

STATE ENTOMOLOGIST AND PLANT PATHOLOGIST
Care of University of Tennessee,
Knoxville, Tenn.

TENNESSEE STATE BOARD OF ENTOMOLOGY
Bulletin published quarterly at Knoxville
G. M. BENTLEY, State Entomologist and Plant Pathologist
*Application for entry as second-class matter at the
Post office, Knoxville, pending.*

Letter of Transmittal

KNOXVILLE, TENN., December 31, 1911.

To His Excellency, Ben W. Hooper, Governor of Tennessee:

SIR: I have the honor to submit herewith the Seventh Annual Report of the State Entomologist and Plant Pathologist, in compliance with the requirements of law.

The activities during the past year have been in the carrying out of the requirements of the law in regard to the inspection of the nurseries and orchards of the State and the making of inspections of all the foreign shipments into the State. The State nurseries, now numbering 365, require the attention of two men besides the Entomologist for a period of four months. The orchard inspections and demonstrations during the year have taken the time of one man for two months. Much time and effort were expended from October 15 to November 14 in the giving of talks and demonstrations on the East Tennessee Agricultural Special Train, which was run over the railroads of East Tennessee.

Due to the passing of a law on July 6 requiring that all growers of strawberry plants wishing to sell in their own county or wishing to ship plants should have them inspected, much additional time from the regular inspection season has been spent in strawberry plant inspections. This has necessitated three special trips to the extreme western part of the State and several trips to Hamilton, McMinn, and Rhea Counties.

Considerable time has been occupied with two classes in entomology at the University of Tennessee, and agricultural short courses and institutes attended in different parts of the State.

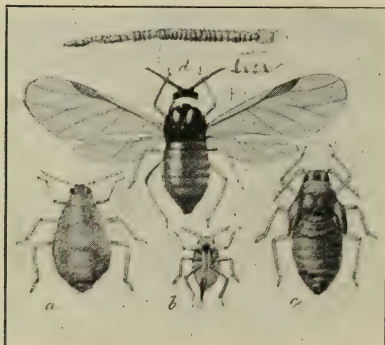
The report submitted herewith gives the various heads into which the work of the year may be divided.

G. M. BENTLEY,
State Entomologist and Plant Pathologist.

Seventh Annual Report of the State Entomologist and Plant Pathologist for 1911

Insect identification

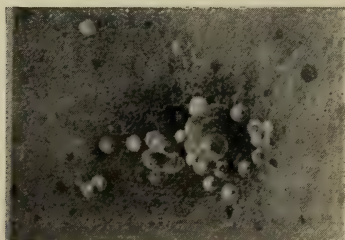
Numerous specimens of insects from the different parts of the State have been sent in for identification and information relative to life histories and best methods of control. The insects causing the greatest loss during the year are: the Hessian fly, squash bug, cabbage bug, green bug, plant louse, woolly aphid,



Woolly Aphis.—*a*, Agamic female; *b*, young aphid; *c*, pupa; *d*, winged female. All greatly enlarged. (After Marlatt, Circular 20 Bureau of Entomology, U. S. Dept. Agr.)



Woolly Aphis.—*a*, Affected root of young tree; *b*, section of root with cluster of aphides; *c*, root aphid female. *a* and *b*, natural size; *c*, much enlarged. (After Marlatt; Circular 20 Bureau of Entomology, U. S. Dept. Agr.)



San Jose Scale, female and cluster of established young. (After Lowe and Parrott, N. Y. Agr. Exp. Sta. Bul. 193.)

San Jose scalt, obscure scale, thirteen-year "locust," pickle worm, cotton leaf-worm, termites, potato beetle, bean weevil, plum curculio, grub-worms, wire-worms, the cucumber beetle, the corn root-worm, and the canna leaf-roller.

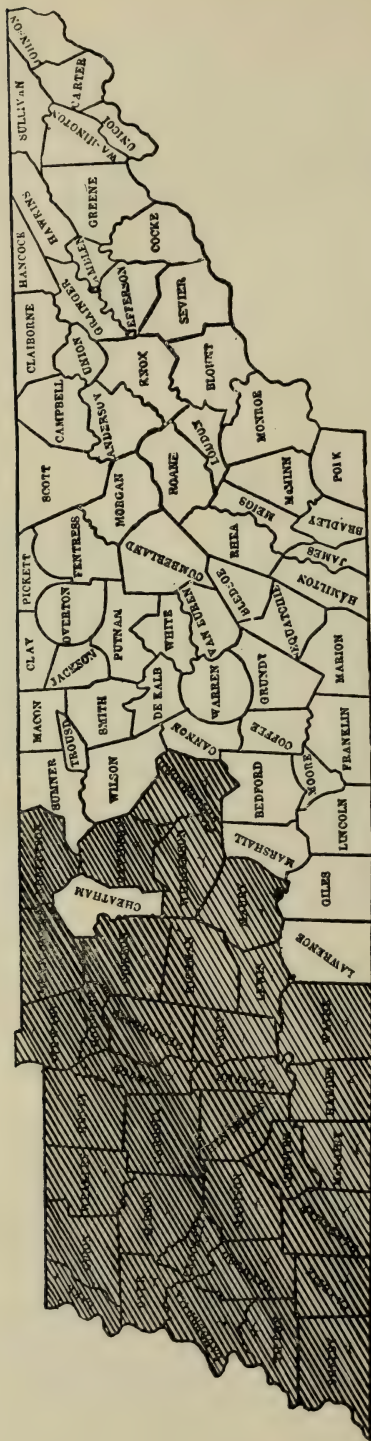
The thirteen-year "locust"

All of West Tennessee and several counties in Middle Tennessee were visited by the periodical Cicada, the thirteen-year "locust," in 1911.

The accompanying map shows the extent of the "locust" outbreak during the year. When this insect was reported as doing its greatest damage a trip was made through Middle and West Tennessee by Mr. E. C. Cotton and the writer. The existing conditions in twelve counties were studied with reference to the numbers and the extent of injury being done. These forms were found to be the thirteen-year "locust" (*Cicada tredecim* Walsh-Riley) and (*Cicada cassinii* Fisher). Many specimens were taken in Cheatham County, thus furnishing a new record. Advice was given to orchardists to delay pruning until after the eggs were deposited and then to prune and burn the limbs, improving the shape of the trees and destroying the numerous eggs. In many counties the "locust" gathered in the woodlands and low bottoms, causing no appreciable damage. The next occurrence of the thirteen-year "locust" will be during 1916, in Dyer, Lauderdale, Gibson, Madison, McNairy, Stewart, and Lincoln Counties.

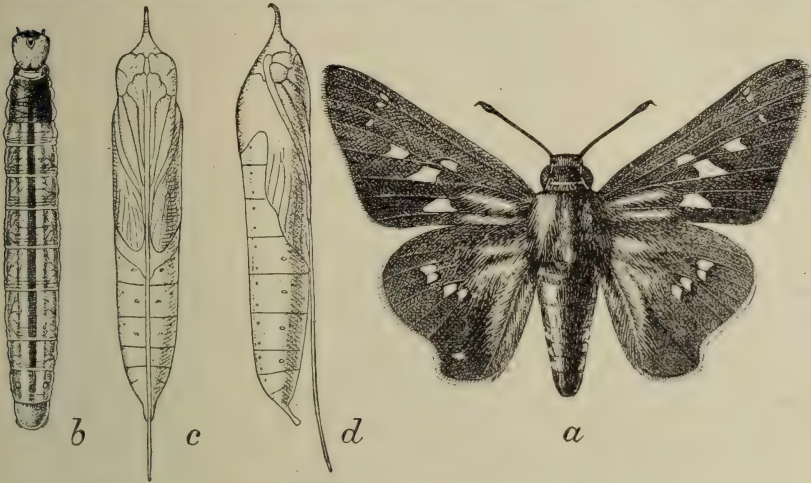
The canna leaf-roller

During the first week in September, while inspecting the greenhouses and nurseries in Memphis, the writer discovered a large amount of injury to the cannas, both in the parks and on the private grounds, and upon investigation found the injury resulting from the work of caterpillars of one of the butterflies, commonly known as skippers (*Calpodus ethlius* Cram). Upon inquiry it was found that the caterpillar had been present about two weeks and that it preferred the bronzed varieties of canna to the green ones. Never before has there been such an outbreak of this caterpillar. Upon further investigation it was found that nearly all the canna leaves were stripped to the midrib. Few if any attempts had been made to poison the caterpillar.

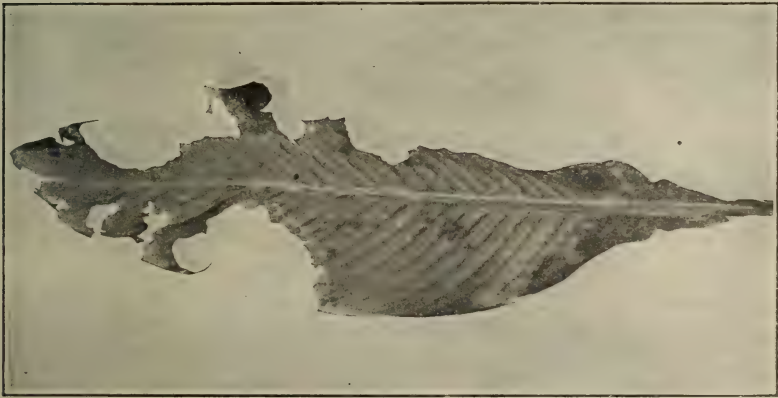


MAP No. 1. Brood XXIII. Appeared in shaded Counties in 1911 (Original)

Upon recommendation arsenate of lead was applied at the rate of 3 lbs. to 50 gals. of water, to what was left of the green-leaved cannas, and proved a satisfactory remedy. At that time, the first week in August, the canna leaf-roller was found in several stages:



Stages of Canna Leaf-roller, enlarged
(After Chittenden, Circular 145, Bureau of Entomology, U. S. Dept. Agr.)



Injured Canna Leaf
(After Chittenden, Circular 145, Bureau of Entomology, U. S. Dept. Agr.)

adult, chrysalis, full grown larvae, and those in the second and third instars. No eggs were found. Many of the full-grown larvae, as well as chrysalises, were gathered and bred in the laboratory. In no case was a parasite hatched out. Observations

were made at Memphis until the 10th of September, and several parts of the State during the rest of the fall. The leaf-roller was found to be present and doing a large amount of injury at the following places: Jackson, Union City, Martin, Nashville, Columbia, Franklin, Chattanooga, Cleveland, Knoxville, and Bristol.

So destructive and generally scattered was this pest that a bulletin will be issued in a short time giving its life-history and methods of controlling it.

**The cotton
leaf-worm**

Large swarms of the cotton leaf-worm (*Alabama argillacea* Hubn.) began to make their appearance in several of the southwestern counties of the State during the last week in August. The outbreak of the caterpillar, which appeared in isolated localities, quickly stripped the cotton of its leaves. From



Cotton Stalk injured by Leaf-worm, (original)

centers they would work out in all directions until the leaves were consumed, nothing being left but the midribs and a few of the

lateral ribs. By the first week in September this pest was recognized as a serious one and many letters were sent to the Office asking for remedial measures. A trip was immediately planned and experiments were conducted in Gibson County, the result proving that the insect could be readily controlled by spraying of the cotton with arsenate of lead at the rate of 3 or 4 lbs. to 50 gals. of water. The conditions were studied in ten different counties in West Tennessee. Owing to the lateness of the cotton, few of



Injury to field of cotton by Cotton Leaf-worm (original)

the bolls having broken, although the plants had a sufficient number of bolls, it was suggested by the writer that the absence of the leaves would not injure the cotton plant at this age but rather hasten the breaking open of the bolls. Consequently little spraying was done and no apparent injury was experienced. In fact, it is the consensus of opinion among the cotton growers in the State that this apparent pest was a great aid in the ripening of the cotton.

The adult moths by the latter part of September occurred in

great quantities in all parts of the State. At night they would accumulate in large numbers around lights and by day completely cover the wires. They were very common in the hotels. At the Maxwell House, in Nashville, 15 specimens were taken in the window of one room. The moths were a great pest at the fruit exhibit at the State Fair, Nashville, September 18 to 23, accumulating in large numbers on the plates of fruit and also affecting the skin of many of the fruits, thus hastening decay. On one small plate of fruit 85 specimens of the moth were taken. On October 5, many of the moths were found in Knoxville and on October 14, numbers were found in Bristol.

Spraying machinery

With the addition of a 2½-H. P. gasoline engine sprayer; a double-acting, horizontal-cylinder sprayer; and a compressed air sprayer to our already extensive exhibit of machinery, there is no feature in spraying which cannot be satisfactorily demonstrated. At present, with thirty distinct types of spray machines, from the simple to the complex, we are able to show the kinds best suited for the various demands of spraying.

Spray solutions

Boiled lime-sulphur solution. — By means of orchard demonstrations, institutes, short courses, press bulletins, circular letters, and correspondence, the importance of timely and careful spraying has been, and is being, brought before the public. The boiled lime-sulphur solution has been experimented with, both as a spray in the orchard and upon growing nursery stock, in comparison with the soluble oils at recommended strengths, with the result that the soluble oils cannot be relied upon in effecting cures and frequently do great injury. Hence, we cannot recommend their use for general spraying. As yet nothing has been found more satisfactory for a winter spray than the boiled lime-sulphur solution. Experiments with the factory-made, concentrated lime-sulphur and the homemade, boiled lime-sulphur, carried on in different parts of the State, show that the factory solution, testing at 29 to 33 degrees Baume, reduced with ten parts of water, give results comparable to the carefully boiled homemade solution. Unless good calcium lime is obtainable, and care can be given to

the making and straining of the solution, we recommend the user to purchase factory-made lime-sulphur solution.

Self-boiled lime-sulphur solution.—More extended use of this valuable spray in the orchards of the State as a fungicide, has proved its merits and it is fast becoming generally used in controlling the brown rot of the peach, plum and cherry; the apple blotch; the sooty fungus, and the apple scab. As a repellent to the curculio, especially on peach and plum, it has proved a success.

Bordeaux mixture.—This fungicide for general spraying is now superseded by the self-boiled lime-sulphur solution. Experiments conducted at three vineyards in the State, proved conclusively, however, that the Bordeaux mixture is the better for spraying grapes.

Arsenate of lead.—This poison is fast coming to take the place of Paris green, and we strongly recommend its use, having as it does the commendable features of adhering well, of not burning foliage, regardless of strength, of being lighter and thus staying in suspension and of whitening the foliage and thus enabling one to determine the sprayed from the unsprayed.

A STATE INSECTICIDE LAW FOR TENNESSEE NEEDED.

The passing by Congress of the Insecticide Act of 1910, which went into effect January 1, 1911, has meant much to the users of insecticides and fungicides. The absence in stores of certain proprietary remedies is now noticed. In prescribing the use of insecticides and fungicides we now feel more sure of results, due to the uniformity of many of these preparations. The great injury resulting from fraudulent goods may be cited under three heads: (1) the buyer fails to save his crop; (2) the result being unsatisfactory, he is unwilling to make the second attempt; and (3) he is influenced to refrain in future from adopting any precautionary or remedial treatment.

The Federal Law has meant much in protecting the people from fraud along these lines; yet it is very important that a State law be enacted in Tennessee. At present there is no law whatsoever in regard to insecticides and nothing to prevent individuals

or firms from manufacturing and selling all forms of fraudulent insecticides and fungicides within the limits of the State. This matter will be taken up before the next Legislature and, it is hoped, will be heartily endorsed by all.

FARMERS AND FRUIT GROWERS SEEKING INFORMATION.

There is an ever growing interest in the subject of insect control and the farmers and fruit growers in Tennessee are today recognizing, as never before, the importance of checking the unnecessary loss from insect depredations. The correspondence of this Office has increased fully 75 per cent since the publication of the first Report in 1905, and a great many specimens of affected limbs, branches, roots, fruits, etc., are sent daily to the Office for examination and recommendation as to treatment.

The State is so large that it is practically impossible for the Entomologist and his assistants to make the frequent observations in all localities which the conditions demand. In order to keep in touch with existing conditions we have 151 county correspondents; at least one from each of the 96 counties. In some of the larger counties there are as many as six correspondents. This arrangement works admirably. Several of the correspondents have become students at the University of Tennessee. Their interest in entomology and closely allied subjects has induced them to take special training. All of the county correspondents are careful observers and keep us in touch with existing conditions in their respective localities. From time to time they send in specimens of insect pests and plant diseases; they also distribute bulletins and reports and send in lists of persons interested in the work and publications of the Board. When there are demands which justify the attention of the Entomologist or his assistants, a personal investigation is made.

The industrial agents of the railroads of the State are becoming thoroughly acquainted with the importance of the operations of the State Board of Entomology and are cooperating in acquainting people along their lines with the work. As a result six different requests have been received for an inspector to visit different sections to make recommendations, and the requests have

been met. The people of the State are fast coming to know that the work of the Board is indispensable, and are continually making demands upon it. There are some who do not yet know the duties of the Board, and for this reason small cards have been printed enumerating a few of the different lines of work. These cards are inclosed with replies to persons writing to us for the first time, also with letters to persons whose names are sent in by the county correspondents. The wording on these cards is as follows:

By an Act of the Legislature, approved April 17, 1905, the TENNESSEE STATE BOARD OF ENTOMOLOGY was established.

1. *To prevent* the introduction into the State of dangerous insect pests and plant diseases.
2. *To check* the spread of injurious forms from place to place within the State.
3. *To investigate* the habits and nature of the injurious insects and plant diseases and prescribe remedies for their prevention and control.
4. *To publish* and distribute literature giving instructions in methods of combating and preventing insect enemies and plant diseases.
5. *To answer letters* of inquiry about insects and diseases free of charge and send bulletins treating the same.
6. *To demonstrate* the making and applying of spray solutions and give information on spray machinery.
7. *To inspect* annually all *nurseries* and *greenhouses* and issue certificates of inspection.

ALL MAY APPLY FOR ASSISTANCE. FRUIT GROWERS, FARMERS, VEGETABLE, COTTON AND TOBACCO GROWERS, BEEKEEPERS, FLORISTS AND NURSERYMEN CAN GET THE BULLETINS AND REPORTS FREE BY ADDRESSING THE STATE ENTOMOLOGIST AND PLANT PATHOLOGIST, KNOXVILLE, TENN.

Special attention is given to destructive insects under the following heads: Insects affecting shade trees, all forms of fruit trees, farm crops, vegetable and garden crops, food supplies, greenhouse plants, stored grains, spreaders of disease, household insects, insects on all forms of nursery stock, and forest insects. Types of all these forms are found in Tennessee and upon request information will be furnished in regard to their injury and control.

**Nursery
inspection**

State nurseries.—The number of inspections made this year is 365, an increase of 153 over last year. In 1905 there were only 194 nurseries in the whole State. Today Tennessee stands foremost of all the Southern States and ahead of many of the Northern States. The annual business aggregating \$3,000,000.

Outside nurseries.—This year, for the first time the appropriation has been sufficient for the inspection of many shipments of nursery stock coming into this State. Three shipments have been held subject to the order of the shippers; several others have been confiscated. All nursery stock coming to the State is required to be accompanied by both an inspection and a fumigation certificate. THE NURSERY FIRMS INTENDING TO SHIP INTO THE STATE MUST FILE THEIR CERTIFICATES OF INSPECTION AND THEIR AGREEMENT TO FUMIGATE ALL STOCK WITH HYDROCYANIC-ACID GAS, IN THE OFFICE OF THE STATE ENTOMOLOGIST AND PLANT PATHOLOGIST.

Foreign nurseries.—Some twenty of the Tennessee nurserymen have purchased seedlings and propagating material from foreign countries, chiefly France, Germany, Holland and Belgium. All of this material has been carefully inspected for crown gall, white pine blister rust, San Jose scale, and brown tail and gypsy moths. This year these foreign shipments have been exceptionally free from insect pests and plant diseases, only three small nests of the brown tail moth, and twenty specimens of crown gall having been taken. The foreign inspection tags had been carefully filled out and were intact on each case.

TENNESSEE NURSERYMEN FOR 1911.

The following nurserymen have had their nurseries inspected and have received State certificates permitting them to sell nursery stock until August 1, 1912. This list comprises 365 distinct nurseries, making the largest list of inspections ever made in Tennessee. Stock from these nurseries is sold chiefly without the State, less than one-eighth being retained in Tennessee. Trees and ornamental shrubs and vines from Tennessee's nurseries are shipped to all parts of the United States and Canada, as

well as to many foreign countries. Tennessee is foremost of all the Southern and Southwestern States in nursery business, the annual income aggregating nearly three million dollars.

During the present year 153 new nursery firms have been added to the list of 1910. On account of consolidation, or the discontinuing of business, 30 names of the previous year's list have been changed.

NURSERIES IN THE THREE DIVISIONS OF THE STATE.

YEAR	EAST	MIDDLE	WEST	TOTAL
1905	61	106	27	194
1906	54	115	40	209
1907	62	118	49	229
1908	62	114	71	247
1909	69	115	67	251
1910	62	111	69	242
1911	149	120	96	365

TENNESSEE NURSERYMEN.

(Number following name indicates rural delivery route.)

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
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BLOUNT COUNTY

MARYVILLE

Chas. R. Coulter.....	1.....	245.....	Strawberries
A. J. Coleman.....	6.....	321.....	Strawberries
C. B. Coleman.....	5.....	320.....	Strawberries
Col. Cupp.....	4.....	327.....	Strawberries
T. L. Ennis.....	14.....	333.....	Strawberries
J. A. Steele.....	3.....	326.....	Strawberries
J. G. Teffeteller.....	1.....	332.....	Strawberries
Clyde T. West.....	4.....	368.....	Strawberries

BRADLEY COUNTY

CLEVELAND

W. A. Brown, 3.....	8.....	325.....	Strawberries
L. A. Dickey.....	$\frac{1}{4}$	41.....	Grapes
Easterly Nursery Co.,			
Wm. A. Easterly....	60.....	39.....	Fruit and Ornamentals

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
Fletcher & Harrison Nurseries, A. J. Fletcher..	60.....	40.....	Fruit and Strawberries

Tennessee Nursery Co., A. J. Fletcher.....	20.....	207.....	Fruit
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CANNON COUNTY

MECHANICSVILLE

Mechanicsville Nurseries	1.....	124.....	Fruit
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WOODBURY

Comer & Womack.....	2.....	125.....	Fruit
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Mountain Spring Nursery Co., Clark & Denby, 2.....	10.....	92.....	Fruit
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CARROLL COUNTY

McKENZIE

McKenzie Nursery Co., Null & Garratt.....	5.....	246.....	Fruit
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VALE

George Mizell.....	2.....	127.....	Fruit
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CHESTER COUNTY

HENDERSON

J. A. C. Emmons & Sons	2.....	314.....	Fruit
F. M. O'Neal.....	$\frac{1}{2}$	129.....	Fruit

COFFEE COUNTY

TULLAHOMA

Tullahoma Nursery Co., Wm. Brittain & Co... 30.....	71.....	Fruit
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CROCKETT COUNTY

BELLS

C. C. Henderson.....	10.....	232.....	Strawberries
F. P. Grant.....	7.....	131.....	Strawberries
A. Vestal.....	10.....	130.....	Strawberries

FRUITVALE

J. K. Dunlap.....	25.....	133.....	Strawberries
N. V. Williams.....	15.....	134.....	Strawberries

Name and Address *No. Acres* *Cert. No.* *Stock Grown*

GADSDEN

D. O. Casey..... 12.....135..... Strawberries

DAVIDSON COUNTY

HERMITAGE

P. M. Carver..... 1.....247..... Fruit

LINTON

W. J. Smith..... 1.....122..... Fruit

NASHVILLE

Belmont College Green-

houses6,000 sq. ft.. 1..... Greenhouse

J. T. Dawson.....500 sq. ft... 2..... Greenhouse

Geny Brothers.....105,000 sq. ft. 3..... Greenhouse

L. Haury & Son.....75,000 sq. ft. 4..... Greenhouse

Hillcrest School Farm, 2 $\frac{1}{4}$ 12..... Ornamentals

Joy Floral Co.....200,000 sq. ft. 5..... Greenhouse

Lishey Nursery and

Greenhouses16,820 sq. ft. 7..... Greenhouse,
Ornamentals

MacIntyre Brothers....150,000 sq. ft. 8..... Greenhouse

E. M. Patterson, Sta. B. 1..... 9..... Fruit

Arnold Schmid.....4,000 sq. ft.. 10..... Greenhouse

D. A. Tibbs..... 10.....205..... Strawberries

DEKALB COUNTY

SMITHVILLE

Bell & Conger Nursery

Co. 8.....244..... Fruit

Big Four Nursery Co.,

Fain C. Potter..... 2.....110..... Fruit

L. O. Bing, 5..... 5.....108..... Fruit

Blue Spring Nursery Co.,

Smith & Son..... 10..... 84..... Fruit

Bluhm Nursery Co.,

Galbraith & Co., 6... 15..... 97..... Fruit

Caney Fork Nursery,

Estes Brothers..... 2.....231..... Fruit

Cedar Grove Nursery,

J. M. Cantrell..... 6.....109..... Fruit

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
Center Grove Nursery Co., Bob Cantrell, 5..	4.....	103.....	Fruit
Choice Fruit Nursery Co., E. O. Underhill, 6...	1.....	112.....	Fruit
Clear Spring Nursery, W. J. Griffith.....	3.....	243.....	Fruit
Cornicopia Nursery Co., Byers & Cantrell, 2..	5.....	227.....	Fruit
Home Model Orchard Co., Jacobs & Washer....	1.....	251.....	Fruit
Home Nursery Co., Hicks & Cantrell....	6.....	85.....	Fruit
Ideal Nurseries, Under- wood and Loring....	2.....	86.....	Fruit
Keltonburg Nursery, C. A. Cantrell, 2.....	8.....	82.....	Fruit
Lassiter Nursery Co., Lassiter & Ferrell, 5..	1.....	249.....	Fruit
Lone Oak Nursery, J. A. Griffith, 1.....	25.....	106.....	Fruit
S. S. Marler, 5.....	$\frac{1}{2}$	250.....	Fruit
Model Home Nursery, R. M. Sanders, 1.....	8.....	96.....	Fruit
Mount Hope Nursery Co., Moss & Allen, 1.	15.....	87.....	Fruit
Mount Olive Nursery Co., James Webb, Sr.....	$\frac{1}{2}$	313.....	Fruit
Mountain Nursery, Taylor Bros. & Cantrell, 1...	1.....	111.....	Fruit
A. G. Mullican.....	$\frac{1}{2}$	252.....	Fruit
New Fruit Nursery Co., W. H. Davis & Son, 5..	50.....	90.....	Fruit
Oak Hill Nursery Co., Davis & Delong, 2...	4.....	95.....	Fruit
Peoples' Nursery Co., Van Hooser, Flanders & Cantrell	1.....	91.....	Fruit
Prosperity Nursery Co., Redman Bros., 2....	5.....	98.....	Fruit

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
Pure Fountain Nurseries, F. P. Sanders, 1.	50.....	99.....	Fruit
Seven Springs Nursery Co., A. G. Cantrell & Sons, 9.....	5.....	107.....	Fruit
Sink Creek Nursery, A. C. Allen & Co., 5..	4.....	207.....	Fruit
Smithville Nursery Co., Webb, Moore & Hicks, 2.....	56.....	100.....	Fruit
Charles Stewart.....	1.....	252.....	Fruit
J.P.Tittsworth & Sons, 2.	$\frac{1}{2}$	102.....	Dewberries
Union Nursery Co., Bing & Co., 5.....	10.....	105.....	Fruit
Wharton Springs Nursery, Spencer, Bing & Taylor Bros., 1.....	12.....	101.....	Fruit
Young Brothers, 5.....	10.....	83.....	Fruit

DICKSON COUNTY

DICKSON

Mrs. M. E. Curry.....	2,000 sq. ft.	136.....	Greenhouse
J. A. Higdon.....	1.....	138.....	Fruit
Miss J. S. Moize.....	100 sq. ft.	137.....	Greenhouse

SYLVIA

Barton's Creek Nurseries, Byrn & Neblett..	15.....	139.....	Fruit
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WHITE BLUFFS

Pleasant Ridge Nursery, Jno. L. Farriest.....	1.....	123.....	Fruit
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FRANKLIN COUNTY

DECHERD

Glenn Cliff Nursery, J. M. Miller.....	20.....	27.....	Fruit
Lone Oak Vineyard, Will F. Halladay....	1.....	22.....	Fruit and Ornamentals

WINCHESTER

Cedar Hill Nursery Co., Jno. W. Shadow.....	30.....	33.....	Fruit and Ornamentals
Commercial Nursery Co., Nicholson & Co., 2....	60.....	26.....	Fruit and Ornamentals
Cumberland Nurseries, E. B. Drake.....	25.....	28.....	Fruit
Fairview Nursery Co., D. A. Duncan.....	1.....	32.....	Fruit
J. C. Hale Nursery Co., J. C. Hale.....	10.....	34.....	Fruit and Ornamentals
Lily Grove Nursery Co., A. C. Trig.....	2.....	30.....	Fruit
Planter's Pride Nurseries, Scott Farriss....	2½.....	29.....	Fruit
Joe Shadow Nursery Co., Joe Shadow.....	10.....	31.....	Fruit
Southern Nursery Co., E. W. Chattin.....	750.....	24.....	Fruit and Ornamentals
Tenn. Wholesale Nurseries, E. W. Chattin..	50.....	25.....	Fruit

GIBSON COUNTY

DYER

L. S. Landrum.....	5.....	140.....	Strawberries
Zeb V. Russell.....	5.....	142.....	Strawberries
E. R. Thornton.....	15.....	241.....	Strawberries
W. R. Thornton.....	10.....	143.....	Strawberries

GIBSON

J. G. Chandler.....	5.....	237.....	Strawberries
J. A. Dungan.....	5.....	145.....	Strawberries
B. C. Warmath.....	5.....	144.....	Strawberries

HUMBOLDT

J. M. Blakemore.....	10.....	146.....	Strawberries
Isham Clement.....	5.....	235.....	Strawberries
B. A. Craddock.....	2.....	238.....	Strawberries
L. R. Duffey.....	35.....	147.....	Strawberries

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
Mrs. C. A. Dungan....	5.....	167.....	Strawberries
H. M. Hamilton.....	10.....	163.....	Strawberries
Gibson County Nursery.	2.....	148.....	Strawberries
M. F. Hamilton, 5.....	5.....	161.....	Strawberries
M. J. Hamilton, 1.....	15.....	162.....	Strawberries
W. H. Hamilton.....	5.....	149.....	Strawberries
Ben Hazelwood.....	10.....	157.....	Strawberries
Mrs. Ben Hazelwood...	1,000 sq. ft.	166.....	Greenhouse
H. J. Hegler, 8.....	10.....	150.....	Strawberries
H. H. Love, 5.....	10.....	160.....	Strawberries
R. J. W. Matthews....	8.....	151.....	Strawberries
Bud Medlin.....	10.....	233.....	Strawberries
Robert Medlin.....	8.....	234.....	Strawberries
T. N. Nelson.....	5.....	152.....	Strawberries
Chester Penn.....	10.....	156.....	Strawberries
W. Z. Raines & Son....	50.....	153.....	Strawberries
Mrs. J. F. Russell....	1,000 sq. ft.	155.....	Greenhouse
J. P. Simmons, 8.....	15.....	165.....	Strawberries
H. S. Stallings.....	25.....	154.....	Strawberries
J. S. Stallings.....	10.....	158.....	Strawberries
Sunny South Nursery			
Co., Bob Fisher.....	10.....	164.....	Fruit
Tennessee Nursery Co.,			
W. W. Baird.....	25.....	159.....	Fruit and Strawberries

MEDINA

W. R. Caruthers.....	5.....	169.....	Strawberries
W. P. Cole.....	8.....	171.....	Strawberries
Hardy Fly.....	10.....	170.....	Strawberries
Wilson Graves.....	10.....	174.....	Strawberries
S. S. Lovell.....	10.....	236.....	Strawberries
J. B. Roe.....	20.....	172.....	Strawberries
E. D. Rowlett.....	20.....	173.....	Strawberries

RUTHERFORD

Rutherford Nursery Co.,			
Chas. Pennington....	20.....	255.....	Scions

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
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GILES COUNTY

LYNNVILLE

Lynnville Nurseries,

M. L. Spivey, 4..... 1.....175.....Fruit

PROSPECT STATION

Woodlawn Nursery,

R. A. Eubank..... 1.....176.....Fruit

GRAINGER COUNTY

WASHBURN

Oak Hill Nursery,

A. L. Hopson..... 4.....254.....Fruit and
Ornamentals

GRUNDY COUNTY

TARLTON

E. J. Morton..... $\frac{1}{4}$ 76.....Forest
Seedlings

HAMBLEN COUNTY

MORRISTOWN

Hobson Nursery Co.,

D. M. Hobson..... $\frac{1}{4}$316.....Fruit

Morristown Nursery,

Brown & Nicholson.. $\frac{1}{4}$318.....Grapes

HAMILTON COUNTY

CHATTANOOGA

Chattanooga Nurseries,

D. W. Hunter.....100..... 35.....Strawberries

John Karston.....20,000 sq. ft..259.....Greenhouse

John Sanders..... 5.....260.....Strawberries

EAST CHATTANOOGA

John Lightfoot..... 20..... 37.....Strawberries

W. H. Montgomery.... $\frac{1}{8}$ 36.....Grapes

HILL CITY

W. F. Haeger.....10,000 sq. ft..257.....Greenhouse

HIXSON

Ashley Brothers..... 10..... 67.....Strawberries

John Clayton..... 5.....226.....Strawberries

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
John E. Folkner.....	5.....	64.....	Strawberries
Joseph Kirklen.....	5.....	68.....	Strawberries
Will Kirklen.....	10.....	69.....	Strawberries
Kirklen & Clayton.....	5.....	70.....	Strawberries
U. S. Messick.....	15.....	65.....	Strawberries
E. E. Swingle.....	5.....	66.....	Strawberries

MISSIONARY RIDGE

Mrs. J. W. Crouch....20,000 sq. ft..256.....Greenhouse

RETRO

T. J. Alexander.....	2½.....	372.....	Strawberries
B. B. Gray.....	8.....	383.....	Strawberries
J. A. Gross.....	9.....	371.....	Strawberries
Kelley & Dooley.....	5½.....	381.....	Strawberries
C. A. List.....	40.....	382.....	Strawberries
P. R. Robison.....	1.....	377.....	Strawberries

ST. ELMO

Mrs. Marietta Hunt....3,000 sq. ft..258.....Greenhouse

SALE CREEK

Will List.....	10.....	58.....	Strawberries
List & Brown, 1.....	15.....	59.....	Strawberries
List & Iles, 1.....	15.....	60.....	Strawberries
David B. Wallace.....	20.....	61.....	Strawberries

SODDY

I. A. Curvin.....	5.....	225.....	Strawberries
A. Horn, 3.....	50.....	62.....	Strawberries
C. C. Hutcheson, 1....	5.....	380.....	Strawberries
L. W. Lee & Son, 1....	25.....	373.....	Strawberries
W. F. Lillard, 1.....	2½.....	376.....	Strawberries
S. S. Spradling, 1.....	5.....	379.....	Strawberries
D. Trantham, 1.....	5.....	378.....	Strawberries
D. L. Varner, 1.....	6.....	375.....	Strawberries
J. A. Varner, 1.....	6.....	374.....	Strawberries

HARDEMAN COUNTY

GRAND JUNCTION

J. W. Gregory.....25.....177.....Strawberries

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
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HAYWOOD COUNTY

BROWNSVILLE

Mrs. Chas. G. Chambers	1,000 sq. ft.	261	Greenhouse
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HENDERSON COUNTY

LEXINGTON

J. A. Young, 1	1	179	Fruit and Strawberries
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HENRY COUNTY

MANSFIELD

Mansfield Nursery Co., Hastings Brothers & Hagler	5	180	Fruit
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PARIS

V. S. Bright	2	211	Strawberries
Cherry Grove Nursery, O. H. Allen & Son	$\frac{1}{8}$	262	Shade Trees

KNOX COUNTY

BEARDEN

Ollie Bean	$2\frac{1}{2}$	369	Blackberries
A. J. Nelson	6	386	Strawberries
Rosecliff Nursery, C. J. McClung, III	35	50	Strawberries, Ornamentals
C. W. Wise, 1	5	385	Strawberries

CONCORD

Empire Nursery Co., Hodge & Deal	$\frac{1}{8}$	310	Fruit
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FOUNTAIN CITY

Charles Baum	112,000 sq. ft.	263	Greenhouse, Ornamentals
Fountain City Fruit Farm	5	269	Strawberries
O. H. Tindell Nursery Co., O. H. Tindell	2	275	Fruit and Ornamentals

HEISKELL

Lone Oak Nursery Co., A. J. McClain	1	181	Fruit
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<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
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KNOXVILLE

G. W. Callahan.....	5,000 sq. ft.	264.....	Greenhouse
C. W. Crouch.....	30,000 sq. ft.	265.....	Greenhouse
A. H. Dailey.....	15,000 sq. ft.	266.....	Greenhouse
East Tenn. & Miss. Orchard Co., C.O. Fowler	$\frac{1}{2}$	267.....	Fruit
C. M. Emory.....	10,000 sq. ft.	268.....	Greenhouse
J. R. H. Hilton.....	6.....	335.....	Strawberries
Howell Nurseries, Bruce Howell.....	10.....	49.....	Ornamentals
Wm. A. Jenkins.....	$\frac{1}{2}$	270.....	Grapes
M. W. Kirby, 2.....	25.....	387.....	Strawberries
Knoxville Nursery Co., N. W. Hale & Co.....	260.....	42.....	Fruit and Ornamentals
Marble City Nursery Co., A. A. Newson.....	60.....	48.....	Fruit and Ornamentals
Benjamin Maynard....	$\frac{1}{4}$	271.....	Violets
A. J. McNutt.....	$\frac{1}{4}$	272.....	Violets
A. Pope.....	$\frac{1}{8}$	273.....	Privet

PICKEL

Thos. C. Schnicke.....	$\frac{1}{2}$	274.....	Fruit and Strawberries
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POWELL STATION

James N. Hendrix.....	7.....	45.....	Fruit and Strawberries
R. H. Hendrix.....	2.....	46.....	Strawberries
Home Nursery Co., S. Dougherty	10.....	44.....	Fruit
W. J. McElroy.....	$\frac{1}{2}$	47.....	Fruit
Standard Nursery Co., R. C. Bell & Co.....	55.....	43.....	Fruit

LAUDERDALE COUNTY

CURVE

W. M. Abernathy.....	15.....	276.....	Strawberries
H. Puryear	4.....	401.....	Strawberries

Name and Address	No.	Acres	Cert. No.	Stock Grown
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GATES

J. A. Bradford.....	15.....	277.....	Strawberries
T. W. Lane.....	12.....	282.....	Strawberries
J. H. McKinnon.....	8.....	283.....	Strawberries
F. J. Thurmond.....	10.....	288.....	Strawberries
J. A. Williams.....	30.....	293.....	Strawberries

RIPLEY

Dr. J. Bradford, 2....	10.....	278.....	Strawberries
C. O. Connor.....	2.....	399.....	Strawberries
J. C. Durham & Sons..	12.....	413.....	Strawberries
S. B. Johns, 2.....	10.....	280.....	Strawberries
Kirkpatrick Bros.....	25.....	281.....	Strawberries
C. L. Macklin.....	20.....	414.....	Strawberries
Mrs. P. H. Pugh.....	1,000 sq. ft.	284.....	Greenhouse
Julian Sutton, 2.....	30.....	286.....	Strawberries
W. B. Sutton, 2.....	10.....	287.....	Strawberries
Clarence B. Thomp- son, 4.....	7½.....	411.....	Strawberries
J. W. Travis.....	8.....	289.....	Strawberries
D. L. Underwood.....	5.....	290.....	Strawberries
E. R. Underwood.....	5.....	291.....	Strawberries
M. K. Underwood.....	5.....	292.....	Strawberries
H. F. Windrow.....	6.....	412.....	Strawberries

LAWRENCE COUNTY

CRESTVIEW

Summertown Nursery, J. H. Green.....	2.....	182.....	Fruit
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FALL RIVER

Fall River Nursery, Mrs. L. H. Garretson..	3.....	183.....	Fruit
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LINCOLN COUNTY

BLANCHE

Blanche Nursery Co., Byers, Flannigan & Son	10.....	222.....	Fruit and Ornamentals
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Name and Address	No. Acres	Cert. No.	Stock Grown
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FAYETTEVILLE

C. W. Webb.....	8,000 sq. ft.	223.....	Greenhouse
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TAFT

Coldwater Nursery Co.,

W. W. Twitty & Sons	20.....	224.....	Fruit
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LOUDON COUNTY

LOUDON

A. W. Ward.....	1½.....	294.....	Fruit and Strawberries
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MACON COUNTY

RED BOILING SPRINGS

T. J. Wooten.....	2.....	119.....	Fruit
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McMINN COUNTY

ATHENS

J. N. Barnett.....	1.....	397.....	Strawberries
B. F. Cates.....	5.....	320.....	Strawberries
John Hawks.....	5.....	319.....	Strawberries
Oscar Hutsell.....	2.....	321.....	Strawberries
G. F. Lockmiller.....	4½.....	317.....	Strawberries
J. P. Minge.....	8.....	295.....	Strawberries
Arthur W. Prather....	2.....	318.....	Strawberries
C. R. Wilkins.....	1.....	398.....	Strawberries

MADISON COUNTY

JACKSON

Mrs. J. A. Cunningham.	2,000 sq. ft.	191.....	Greenhouse
T. J. Frye.....	100 sq. ft.	187.....	Greenhouse
Miss M. E. McCowat..	300 sq. ft.	188.....	Greenhouse
Mrs. G. H. McNeil....	1,000 sq. ft.	189.....	Greenhouse
T. L. Metcalf.....	4,000 sq. ft.	192.....	Greenhouse
W. D. Smith.....	5.....	193.....	Fruit
Miss Lora Spah.....	100 sq. ft.	190.....	Greenhouse

MARSHALL COUNTY

CORNERSVILLE

Richland Nursery,

A. N. Bligh.....	1.....	194.....	Fruit
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Name and Address	No. Acres	Cert. No.	Stock Grown
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LEWISBURG

W. E. Gibson.....	$\frac{1}{2}$	196.....	Fruit
Mrs. R. H. Haynes....	300 sq. ft....	296.....	Greenhouse

MAURY COUNTY

COLUMBIA

Claude M. Erwin.....	1.....	13.....	Strawberries, Dewberries
Oakland Nurseries, W. Y. C. Grant.....	18.....	14.....	Fruit and Ornamentals
T. W. Sowell.....	1.....	15.....	Grapes and Strawberries
John W. Thompson....	8,000 sq. ft..	16.....	Greenhouse

CULLEOKA

Maple Nurseries, Cal- vert Brothers.....	1.....	197.....	Shade Trees
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MEIGS COUNTY

BREEDENTON

S. S. Eaves.....	25.....	393.....	Strawberries
Howard Bros.....	$3\frac{1}{2}$	392.....	Strawberries
F. M. McKenzie & Son.	8.....	391.....	Strawberries

EUCHEE

Euchee Nursery, J. S. Rowden.....	$1/16$	297.....	Fruit
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PINHOOK

S. J. Hornsby.....	8.....	396.....	Strawberries
J. W. Powers, 3.....	8.....	394.....	Strawberries
W. E. Pullen, 3.....	11.....	395.....	Strawberries

MONROE COUNTY

SWEETWATER

J. P. Richeson.....	15.....	298.....	Strawberries
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MONTGOMERY COUNTY

CLARKSVILLE

Central Greenhouse, T. L. Metcalf.....	2,000 sq. ft..	209.....	Greenhouse
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<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
Evergreen Lodge Greenhouse, James Morton	15,000 sq. ft.	208.....	Greenhouse
M. E. Hiett.....	8,000 sq. ft.	210.....	Greenhouse, Ornamentals

OBION COUNTY

UNION CITY

J. K. Postma.....	5,000 sq. ft.	213.....	Greenhouse
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RHEA COUNTY

CARP

J. H. Pugh.....	11.....	390.....	Strawberries
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DAYTON

Jno. R. Abel.....	10.....	52.....	Strawberries
J. C. Carney, 1.....	4.....	311.....	Strawberries
G. S. Cooley.....	25.....	352.....	Strawberries
J. D. & S. L. Ellis.....	100.....	53.....	Apple Scions
Gilbreath Fruit Co.....	25.....	57.....	Strawberries
S. W. Gill.....	20.....	239.....	Strawberries
T. P. Houston.....	10.....	342.....	Strawberries
Mrs. Lillie Sinclair....	5.....	55.....	Strawberries
J. R. Swafford, 4.....	3.....	324.....	Strawberries
Tom Wilkey, 4.....	6.....	310.....	Strawberries

EVANSVILLE

J. G. Ballard.....	5.....	345.....	Strawberries
J. M. Ballard.....	14.....	344.....	Strawberries
Beasley & White.....	10.....	367.....	Strawberries
W. P. Blevins.....	1.....	331.....	Strawberries
J. T. Boofer.....	8.....	337.....	Strawberries
J. M. Bramlett.....	4.....	346.....	Strawberries
M. C. Bramlett.....	10.....	370.....	Strawberries
R. L. Brown.....	20.....	340.....	Strawberries
W. P. Darwin.....	20.....	339.....	Strawberries
J. H. Denton.....	4.....	338.....	Strawberries
Evens Brothers.....	15.....	347.....	Strawberries
O. G. Gannaway.....	8½.....	330.....	Strawberries
W. G. Gravett & Son...	25.....	350.....	Strawberries
John R. Hall.....	17.....	356.....	Strawberries

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
J. N. Kennedy.....	3.....	336.....	Strawberries
S. W. Knight.....	2.....	353.....	Strawberries
J. A. Mathis.....	2.....	323.....	Strawberries
J. S. Miller.....	8.....	364.....	Strawberries
W. R. Milliken, 1.....	2½.....	362.....	Strawberries
C. L. Neal, 1.....	3.....	360.....	Strawberries
J. H. Neal, 1.....	3.....	359.....	Strawberries
W. E. Northup.....	34.....	355.....	Strawberries
J. N. Owensby.....	20.....	366.....	Strawberries
W. N. Smith, 1.....	6.....	361.....	Strawberries
Smith & Hurst.....	6.....	363.....	Strawberries
J. S. Swafford.....	12.....	357.....	Strawberries
J. B. Taylor.....	13.....	322.....	Strawberries
W. P. Thomison & Son.	50.....	348.....	Strawberries
C. O. Vaughan.....	20.....	354.....	Strawberries
John Vaughan.....	10.....	343.....	Strawberries
E. F. Waterhouse.....	31.....	328.....	Strawberries
James Watson.....	1.....	358.....	Strawberries
Y. F. Webb.....	4.....	351.....	Strawberries
T. B. Weir.....	10.....	349.....	Strawberries
J. S. Wilkey.....	15.....	341.....	Strawberries
S. L. Wilkey.....	60.....	365.....	Strawberries
J. H. Womack.....	10.....	329.....	Strawberries

ROANE COUNTY

HARRIMAN

W. W. Wallace.....	5.....	51.....	Strawberries
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ROBERTSON COUNTY

GREENBRIER

Greenbrier Nursery Co.,

R. R. Harris.....	60.....	121.....	Fruit and Ornamentals
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The Harris Nursery,

R. R. Harris.....	10.....	204.....	Fruit and Shade
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<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
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RUTHERFORD COUNTY

MURFREESBORO

Rutherford Fruit & Nur-			
sery Co., C. R. Given.	1.....	200.....	Fruit
Stones River Nurseries,			
Bilbro & Allen.....	25.....	198.....	Fruit

SEQUATCHIE COUNTY

DUNLAP

W. F. Merriman.....	1.....	312.....	Strawberries
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SEVIER COUNTY

GATLINBURG

H. B. Kear.....	1.....	301.....	Fruit
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SHELBY COUNTY

BUNTYN

R. B. Koen & Son.....	2.....	334.....	Fruit and Ornamentals
G. W. Smith & Son, 4..	10.....	203.....	Ornamentals

MEMPHIS

Charles Adams,			
1200 Union Ave....	$\frac{1}{8}$	302.....	Ornamentals
Granahan Greenhouses.	3,000 sq. ft..	217.....	Greenhouse
Idlewild Greenhouses..	10,000 sq. ft..	220.....	Greenhouse
Johnson's Greenhouses.	20,000 sq. ft..	214.....	Greenhouse
Evan McKenzie,			
20 Diana St.....	5,000 sq. ft..	221.....	Greenhouse
Memphis Floral Co....	50,000 sq. ft..	215.....	Greenhouse
Memphis Nursery, J. H.			
Boyd	5.....	202.....	Fruit
Pearson-McCarty Co..	8,000 sq. ft..	218.....	Greenhouse
Max Raupp.....	100 sq. ft..	219.....	Greenhouse

SULLIVAN COUNTY

BRISTOL

Bristol Floral Co.....	10,000 sq. ft..	205.....	Greenhouse
Globe Nurseries, Wood			
Bros. & Nickels.....	200.....	204.....	Fruit, Orna- mentals and Shade

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
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SUMNER COUNTY

GALLATIN

J. W. Hill.....	20.....	18.....	Strawberries
R. D. McClain.....	1.....	19.....	Strawberries
Perce & Shamberger...	10.....	21.....	Strawberries

PORTLAND

Donoho Brothers.....	10.....	21.....	Fruit, Straw- berries and Ornamentals
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TIPTON COUNTY

COVINGTON

Mrs. R. S. Baird.....	500 sq. ft...	303.....	Greenhouse
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WARREN COUNTY

DAYLIGHT

New Home Nursery, J. H. Wright.....	2.....	80.....	Fruit
Short Mountain Nurse- ry, Purser & Davis...	6.....	81.....	Fruit

DIBRELL

Dibrell Nursery, I. H. Griffith.....	5.....	79.....	Fruit
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IRVING COLLEGE

Taylor Perry.....	5.....	75.....	Ornamentals
N. N. Smith.....	7.....	315.....	Forest Seedlings

McMINNVILLE

W. H. Flanders, 4.....	$\frac{1}{2}$	304.....	Fruit
Forest Nursery & Seed Co., J. H. H. Boyd..	30.....	74.....	Shade and Ornamentals
Griffith & Haley, 4.....	2.....	305.....	Fruit
Highland Nursery Co., J. B. Loring & Son, 4.	10.....	77.....	Fruit
Home Nursery, Solomon Craven, 3..	1.....	73.....	Strawberries
Knob Nursery, G. R. Newby & C. R. Low- ery	$2\frac{1}{2}$	205.....	Fruit

Name and Address	No. Acres	Cert. No.	Stock Grown
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Pleasant Valley Nursery, S. D. Ellrod & Son, 4.	5	78	Fruit
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Warren County Nursery, O. D. & J. D. Mulligan	2½	308	Fruit
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Williams & Son	½	206	Fruit
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SMARTT

Peter Craven & Son	5	72	Fruit
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WILLIAMSON COUNTY

FRANKLIN

Matthew Rizer	2	228	Strawberries
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James E. Scobey	2	230	Strawberries
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Edward Truett	½	229	Ornamentals
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WILSON COUNTY

LEBANON

Lebanon Floral Co., Anderson & Son	5,000 sq. ft.	116	Greenhouse
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MARTHA

Wilson County Nursery, Green Bros.	2	10	117	Fruit
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CERTIFICATE SHIPPING TAG.

With the beginner in the nursery business there has been more or less misunderstanding in regard to the size, arrangement and use of the certificate shipping tag. In the case of some of the larger nurserymen of the State inconvenience is often experienced in regard to the filling out of the addresses on the tags before their nurseries have been expected. Some overcome the difficulty by attaching two tags, one bearing the certificate and the other the name of the firm and the list of stock. To assist the former, and by way of suggestion to the latter, the following remarks are made: There is no set form for arranging the certificate tag, or specification as to material of the tag, but it is required that the EXACT WORDING on the inspection certificate, including the number and date of inspection, be printed on the tag; the State seal alone, may be omitted. A certificate tag out of

date cannot be changed by crossing out figures and adding new ones. Facsimiles of the styles of certificates recommended are show in this Report. Style I is very good as to size and arrangement of printing. The front and back views are shown. Style II offers a suggestion. Both of these styles of tags are used in large quantities by the nurserymen throughout the State. Style III and IV show front and back views of a larger tag with the order list differently arranged. Any one of the four styles of tags

Rush! Live Plants—Perishable

From

***Tennessee Nursery Company,
Cleveland, Tennessee.***

To

STYLE I.—Front

Tennessee State Board of Entomology.

T. F. PECK, Commissioner of Agriculture, Chairman.

G. M. BENTLY, State Entomologist and Plant Pathologist, Secretary

Number 207.

KNOXVILLE.

Season 1911-'12

Certificate of Nursery Inspection.

THIS IS TO CERTIFY, That in accordance with an Act of the Legislature, approved April 17, 1905, the nursery grounds of THE TENNESSEE NURSERY COMPANY, at Cleveland, County of Bradley, State of Tennessee, were inspected by Chas. Pennington on July 18, 1911. The growing nursery stock was apparently free from San Jose Scale and other dangerously injurious insect pests and plant diseases.

Said nursery is equipped for fumigating all nursery stock.

This certificate has reference to insects and diseases, and is not otherwise to be considered as an endorsement of the parties to whom issued; it does not apply to stock not grown in the aforesaid nurseries unless such stock is covered by proper certificate in favor of the nursery where grown. It is not transferable and may be revoked for cause.


This certificate becomes invalid after August 1st, 1912, and cannot be legally used after that date.

G. M. BENTLEY,

State Entomologist and Plant Pathologist.

STYLE I.—Back

shown may be ordered in quantities, a blank place being left for the wording of the certificate, which may be added, after the inspection, on the number of tags to be used for the current year. This last recommendation is carried out by the larger nurserymen to obviate the inconvenience of having two tags, and to enable them to fill out the tags before the inspection is made. Several of the nurserymen are using Style IV, and upon receiving their inspection certificates they take their tags to their local printer

	<p>FROM</p> <p>Barton's Creek Nurseries</p> <p>SYLVIA, TENNESSEE</p>
	<p>To</p>
	<p>Amount, \$</p>

STYLE II.—Front

<p>TENNESSEE STATE BOARD OF ENTOMOLOGY }</p> <p>KNOXVILLE, TENNESSEE</p>	<p>SEASON OF 1911-'12</p> <p>CERTIFICATE NO. 139</p>
<p>CERTIFICATE OF NURSERY INSPECTION</p>	
<p>THIS IS TO CERTIFY, That in accordance with an Act of the Legislature, approved April 17, 1905, the nursery grounds of Barton's Creek Nursery, at Sylvia, County of Dickson, State of Tennessee, were inspected by Chas. Pennington, on Aug. 29th, 1911. The growing nursery stock was apparently free from San Jose Scale and other dangerously injuriously insect pests and plant diseases. Said nursery is equipped for fumigating all nursery stock.</p>	
<p>This certificate has reference to insects and diseases, and is not otherwise to be considered as an endorsement of the parties to whom issued; it does not apply to stock not grown in the aforesaid nurseries unless such stock is covered by proper certificate in favor of the nursery where grown. It is not transferable and may be revoked for cause.</p>	
<p>This certificate becomes invalid after August 1st, 1912, and cannot be legally used after that date. G. M. BENTLEY, State Entomologist and Plant Pathologist.</p>	

STYLE II.—Back

Live Plants---Protect from Cold or Heat---Plant at Once

To

FROM

Woodlawn Nursery

Prospect Station, Tennessee

STY E III.—Front

Total, \$

TENNESSEE STATE BOARD OF ENTOMOLOGY
KNOXVILLE, TENNESSEE

CERTIFICATE OF NURSERY INSPECTION

THIS IS TO CERTIFY: That in accordance with an Act of the Legislature, approved April 17, 1905, the nursery grounds of R. A. Eubank, at Prospect Station, Tennessee, were inspected by Chas. Pennington, on August 17, 1911. The growing nursery stock was apparently free from San Jose Scale and other dangerously injurious insect pests and plant diseases. Said nursery is equipped for fumigating all nursery stock. This certificate has reference to insects and diseases, and is not otherwise to be considered as an endorsement of the parties to whom issued; it does not apply to stock not grown in the said nurseries unless such stock is covered by proper certificate in favor of the nursery where grown. This certificate becomes invalid after August 1st, 1912, and cannot be legally used after that date.

G. M. BENJEFY, State Entomologist and Plant Pathologist.

STYLE III.—Back

Live Plants. Perishable If Delayed
FUMIGATED

FROM EASTERLY NURSERY CO.
CLEVELAND TENNESSEE

TO

Tennessee State Board of Entomology.

T. F. PECK, Commissioner of Agriculture, Chairman.
 G. M. BENTLEY, State Entomologist and Plant Pathologist, Secretary
 Season 1911-'12
 KNOXVILLE.
 Number 39.

Certificate of Nursery Inspection.

THIS IS TO CERTIFY, That in accordance with an Act of the Legislature, approved April 17, 1905, the nursery grounds of **EASTERLY NURSERY COMPANY** at Cleveland, County of Bradley, State of Tennessee, were inspected by Chas. Pennington on July 17, 1911. The growing nursery stock was apparently free from San Jose scale and other dangerously injurious insect pest and plant diseases.

Said Nursery is equipped for fumigating all nursery stock. This certificate has reference to insects and diseases, and is not otherwise to be considered as an endorsement of the parties to whom issued; it does not apply to stock not grown in the aforesaid nurseries unless such stock is covered by proper certificate in favor of the nursery where grown. It is not transferable, and may be revoked for cause.

This certificate becomes invalid after August 1st, 1912, and cannot be legally used after that date.

G. M. BENTLEY, State Entomologist and Plant Pathologist

STYLE IV.—Front

NO. ORDER			
NO.	VARIETY	DOL.	CTS.
.....	Apple Trees		
.....	Peach Trees.....		
.....	Pear Trees.....		
.....	Cherry Trees.....		
.....	Plum Trees.....		
.....	Apricot		
.....	Mulberries		
.....	Persimmon		
.....	Quince		
.....	Figs.....		
.....	Pecan Trees.....		
.....	Strawberries		
.....	Nut Trees.....		
.....	Shade		
.....	Evergreens		
.....	Hedge Plants		
.....	Shrubs		
.....	Roses		
.....	Grapes		
.....	Blackberries		
.....	Raspberries		
.....	Total.....		
.....	Credit Lodging		
.....	Amount due.....		

STYLE IV.—Back

and have the wording of the new certificates printed in. Tags may be ordered in quantities with everything printed upon them in one or two colors, excepting the certificate, from the following firms: American Tag Company, State and 61st Streets, Chicago, Ill.; Dennison Manufacturing Co., 15 John Street, New York.

ORGANIZATIONS.

The State Nurserymen's Association started in 1905 for the purpose of acquainting the orchardists with the nurserymen, as well as to establish higher standards in business relations and bring before its members the latest and most approved methods pertaining to their interests. This organization now has an active membership of 135 people in the State, besides many honorary members from eight other Southern States.

In the Southern Nurserymen's Association there are 12 members from Tennessee and in the National Nurserymen's Association, 15.

There is no better way to keep up with the ever advancing horticultural science than by being a member of some live horticultural organization. If you are not a member, join at once, especially your State organization, from which you will get the greatest amount of benefit in dealing with Tennessee's conditions. Send the Secretary your name. A program of the last Convention follows.

PROGRAM

SEVENTH ANNUAL CONVENTION

STATE HORTICULTURAL SOCIETY

STATE NURSERYMEN'S ASSOCIATION

FIRST ANNUAL CONVENTION

STATE BEEKEEPERS' ASSOCIATION

NASHVILLE, TENN.

January 25th, 26th and 27th, 1912

SPECIAL ANNOUNCEMENTS.

HEADQUARTERS.

The Headquarters chosen for the Conventions this year will be at the Maxwell House, corner of Church Street and Fourth Avenue. The meetings will be held in the Assembly Room of this Hotel. Special rates for those attending the Conventions are offered by the management and all

are encouraged to secure rooms in advance. The regular rates are \$1.00 to \$3.50, European plan.

REDUCED RAILROAD RATES.

The Masonic Grand Lodge will be in session during the week, for which occasion the railroads of the State give a special round trip rate to Nashville. Those attending may take advantage of this rate.

FRUIT EXHIBITS.

As an innovation this year there will be exhibits of Tennessee grown fruit, made by the Ellis Brothers, Dayton; I. C. Murphy, Columbia; J. L. Jones, Columbia; Henry R. Howard, Chattanooga; Robert Walker, Chattanooga; H. C. Scruggs, Nashville, and others. A collection of the famous Hood River Valley fruit will be made by the Stark Nursery Company, Louisiana, Mo.

N. B.—The Fruit Growers, Nurserymen, and Beekeepers are encouraged to add to this exhibition, fruit, nursery stock, and products from the apiary.

ADDRESSES.

Everyone on the program is urged to prepare a paper, so that a full report of the meetings may be kept by the secretaries.

MEMBERSHIP.

Efforts are being made to increase the membership to 200. All persons interested are cordially invited to attend the meetings and take part in discussions. Membership dues are \$1.00 a year.

THE STATE HORTICULTURAL SOCIETY

PROGRAM

THURSDAY, JANUARY 25, 1912

MORNING SESSION, 10:00 O'CLOCK

Call to Order

Appointment of Committees

Report of Secretary-Treasurer

Culture and Care of Sweet Potatoes.....	G. D. Hawk, Jackson
The Winter Care of Sweet Potatoes.....	J. T. Allen, Fountain City
Market Gardening for a Local Market.....	C. H. Tritchler, Nashville
The Tomato as a Money Crop.....	E. H. Lassenberry, Gibson

AFTERNOON SESSION, 2:00 O'CLOCK

The Organization and Management of Commercial Orchard

Companies.....J. R. H. Hilton, Knoxville

The Year's Experience in Spraying.....	{	W. H. Rochelle, Jackson
		J. D. Ellis, Dayton
		I. C. Murphy, Columbia
		Neal Varnell, Cleveland

Commercial Strawberry Growing.....C. B. Coleman, Knoxville

Reports of Committees.

Election of Officers.

NIGHT SESSION, 8:00 O'CLOCK

The Conservation of Soil Fertility.....Prof. H. A. Morgan, Knoxville



Tennessee State Nurserymen's Association Convention at Nashville, Jan. 26, 1912

STATE NURSERYMEN'S ASSOCIATION

FRIDAY, JANUARY 26, 1912

MORNING SESSION, 9:30 O'CLOCK

Call to Order.

Invocation.....	Dr. James I. Vance, Nashville
Address of Welcome.....	Captain T. F. Peck, Commissioner of Agriculture
Response.....	J. H. Austin, Antioch
The Labor Question in the Nursery.....	Robert Twitty, Taft
Co-Operation in Selling Nursery Stock and Marketing Fruit	
.....	T. B. Thackston, L. & I. Agt., Sou. Ry., Bristol
Grasses.....	H. A. Clarke, Wartrace

Appointment of Committees.

Nominations

Auditing.

Resolutions.

AFTERNOON SESSION, 2:00 O'CLOCK

Executive Meeting, Report of Committee, Election of Officers.

Soil Improvement.....	J. E. Converse, Crossville
Field Demonstrations.....	H. D. Tate, Special Agent U. S. Dept. of Agr.
The Federal Inspection Bill.....	W. H. Stark, Louisiana, Mo.
Quiet Hours of the Nurseryman.....	Robert S. Walker, Chattanooga

EVENING SESSION, 7:30 O'CLOCK.

President's Annual Address.....A. J. Fletcher, Cleveland
 Delegate's Report of the American Apple Congress, Denver, Col-
 orado, November 14, 15, 16, 1911.....Henry R. Howard, Chattanooga

STATE BEEKEEPERS' ASSOCIATION

MORNING SESSION, 9:30 O'CLOCK

Call to Order.

Reading of the Minutes of the last meeting.

Report of the Treasurer.

Appointment of Committees.

Opening Address.....	Dr. A. Gibbs, Thompson Station
Spring Management of the Apiary.....	B. G. Davis, Spring Hill
European Foul Brood.....	Porter Ward, Elkton, Ky.
American Foul Brood.....	J. M. Buchanan, Franklin
Making Increase.....	David Wauford, Alexandria

AFTERNOON SESSION, 2:00 O'CLOCK

Report of Committees.

Election of Officers.

[illegible]

Questions and Discussions.

Adjournment.

OFFICERS OF THE
STATE HORTICULTURAL SOCIETY.

PRESIDENT

PERCY BROWN.....Spring Hill

VICE-PRESIDENT

ROBERT MORRIS.....Ridgetop

SECRETARY-TREASURER

C. A. KEEFER.....State University, Knoxville

SECTIONAL VICE-PRESIDENTS

EAST TENNESSEE—W. M. Wood.....Bristol

MIDDLE TENNESSEE—Prof. John Daniels.....Nashville

WEST TENNESSEE—W. H. Rochelle.....Jackson

OFFICERS OF THE
STATE NURSERYMEN'S ASSOCIATION.

PRESIDENT

A. J. FLETCHER.....Cleveland

VICE-PRESIDENT

HENRY N. CAMP, JR.....Winchester

SECRETARY-TREASURER

G. M. BENTLEY.....State University, Knoxville

SECTIONAL VICE-PRESIDENTS

EAST TENNESSEE—A. I. Smith.....Knoxville

MIDDLE TENNESSEE—Charles R. Givans.....Murfreesboro

WEST TENNESSEE—J. H. Boyd.....Memphis

OFFICERS OF THE
STATE BEEKEEPERS' ASSOCIATION.

PRESIDENT

DR. A. GIBBS.....Thompson Station

SECRETARY-TREASURER

J. M. BUCHANAN.....Franklin

FILL OUT, DETACH AND RETURN THIS SHEET.

To the Fruit Growers and Orchardists of Tennessee:

Dear Sir:

This Office is interested in gathering full information concerning the orchards and truck farms in this State. We are especially desirous of learning the size and age of your orchard and in what truck crops you are chiefly interested. From the information gained we can get a better idea of your conditions and thus more effectively help you in combating insect pests and fungous diseases.

We will greatly appreciate your cooperation in carefully answering the following questions and returning same at an *early date* to the

STATE ENTOMOLOGIST,
Knoxville, Tenn.

Name..... Date.....

P. O..... R. D. No..... County.....

1. How many acres in orchard have you?.....
2. How many acres of trees of.....
(give variety of each)

{	Apple?.....
{	Peach?.....
{	Pear?.....
{	Plum?.....
{	Cherry?.....
3. What age is your orchard?.....
4. Where did you purchase your trees?.....
5. What distance apart are your trees?.....
6. Give location; level.....sloping.....
7. Do you cultivate your orchards?.....
8. What is your average fruit crop?.....
9. Do you keep honey bees?.....
10. Are you interested in trucking?.....
11. Do you grow strawberries?.....
12. Are you interested in blackberries or raspberries?.....
13. Do you grow pecans?.....
14. What fungous and insect pests trouble your trees most?.....
15. Are your trees infested with San Jose scale?.....
16. Is there any San Jose scale in your vicinity?.....
17. Have you other injurious scale insects?.....

18. Are your apple trees affected either on trunk or root by woolly aphis?

.....

19. Are your peach trees troubled by peach borers?.....

20. Kindly send us the names and addresses of all orchardists and truckers whom you know to have fifty or more trees or two acres or more in truck crops.

NOTE—We shall be pleased to name and give remedies for all insect pests and plant diseases sent to us.

EXHIBITS SHOWING THE PRACTICAL VALUE OF ENTOMOLOGY.

A collection has been made of economic insects, showing the various stages through which they pass and their effect upon plants; diagrams and charts of the more economic insects, together with specimens of injuries to fruit, shade and ornamental trees; the work of insects upon the grain crops, greenhouse plants and stored food supplies; and common insects of the household and insects which spread diseases. A collection has also been made of the effective insecticides for controlling insects; diagrams illustrating effective practices for keeping in check many of the injurious insects of the farm and a complete line of spraying apparatus, from the simplest hand sprayer to the larger power sprayers fitted for the various uses. These collections have been exhibited on the East Tennessee Agricultural Special Train; at the annual meetings of the State Nurserymen's Association; the State Horticultural Society; and the State Beekeepers' Association at Nashville, and at the annual meeting of the East Tennessee Farmers' Convention at Knoxville.

Too much stress cannot be placed upon the value of a portable exhibit of this kind. The exhibit on the Agricultural Train proved one of peculiar interest and was visited by many thousands of people. Exhibits of this nature should be taken to the State and Tri-State Fairs and the larger county fairs throughout the State. It would mean much in acquainting people with the economic insects, enabling them to distinguish between injurious and beneficial forms and combat the one and protect the other.

OUTLINE OF LECTURES AND DEMONSTRATIONS GIVEN ON THE EAST TENNESSEE AGRICULTURAL SPECIAL TRAIN.

LECTURE I.—WHAT NURSERY INSPECTION MEANS TO THE ORCHARDIST.

The importance of buying those trees only that have been inspected and that have the inspection certificate attached is given much stress. The method of inspection is outlined, and trees infested with San Jose scale, the woolly aphis, crown gall and hairy root are shown for the purpose of acquainting visitors with these insect pests and plant diseases, which are quarantined in this State. A short discussion is given of each of these parasites, and orchardists are warned not to accept any trees so affected from the nurserymen or their agents. One of the great drawbacks to commercial orcharding has been the setting of inferior and diseased trees, trees which would never make fruiting orchards even when given the best of care and attention.

The prospective orchardist is warned against buying his trees from the "fruit tree agent." It is far safer to buy direct from the nurseryman, from one who has a reputation and one who is desirous of retaining his reputation and continuing his business for many years. Many of the agents are men who do not know the varieties of trees and have never heard of the State Inspection Laws or the quarantined insects and plant diseases.

LECTURE II.—SPRAYING: SOLUTIONS AND EQUIPMENT.

This lecture includes a practical talk on the orchard insects and diseases, how to recognize them in the orchard, and the most effective means of combating and controlling them. Special stress is laid upon the San Jose scale and the use of the boiled lime-sulphur solution while the trees are dormant for its control. The method of making the solution is carefully gone over and those not equipped for making the lime-sulphur spray at home are advised to buy the concentrated form, which may be readily mixed with water and applied. The value of the lime-sulphur as a winter remedy is given in contrast with the use of the same solution in weak form for the summer spray to control the many

blemishes which keep the fruit from bringing the highest price. Samples of sprayed and unsprayed fruit are given to all present at this lecture; thus a lasting lesson is impressed upon their minds of the value of this efficient and economical practice in the orchard.

The subject of spray pumps and the necessary equipment for spraying is plainly discussed, use being made of charts, drawings, and the working apparatus to elucidate the points made. At the close of each lecture a few minutes were devoted to the answering of questions—a practice which resulted in enthusiastic and helpful discussions.

DEMONSTRATION.—An exhibit of sprayed and unsprayed fruit, all forms of spray machinery, nozzles, pruning saws, knives and shears was explained; also a collection of one and two-year-old nursery stock, showing the difference between healthy trees and those affected with the San Jose scale, woolly aphis, crown gall and hairy root. The different forms of spray machinery from the simplest to the more complex were shown fully equipped for use.

Apiary inspection.

For the first time in Tennessee an inspection of the bees has been undertaken. This was made possible through an appropriation of the of the Legislature of 1911, Chapter 50, of the Acts of the Fifty-seventh General Assembly.

The results of the initial work in apiary inspection are most gratifying. The beekeepers take kindly to the requirements and seem very willing to do all they can to cooperate and to extend the work. It is surprising to learn how very few of them are acquainted with the bee diseases, and in fact, how few are giving their bees proper care and attention. The problem is an educational one and it will be necessary to get public sentiment back of the requirement in order that a more liberal appropriation may be made for this important work. It is a fact that bee diseases and the bee moth are at the bottom of all the beekeeper's troubles, and in the effort of adjust these matters an educational campaign is as important as an apiary inspection. From the work thus far conducted it is evident that when once instructed the beekeeper will gladly take up the work and the prospects in honey producing will be most gratifying.

In this Office today there are listed 1,200 Tennessee beekeepers, and to inspect one-half of these will require an appropriation at least as large again as that already set aside for this work. During the coming year inspections will be made beginning at the larger apiaries and continuing as far as the money permits.

A bulletin giving the more important details in beekeeping, describing the American and European foul breed, and quoting the new law relative to apiary inspection, is nearly ready for the printer. A large edition of this bulletin will be printed and distributed throughout the State. Through this bulletin and the press we hope to acquaint all the beekeepers with the Apiary Inspection Law and the new interest being taken in their behalf.

BEEKEEPING.

Treatment for foul brood

In the evening after the bees are quiet brush or shake all the bees from the combs into a clean hive containing frames with foundation starters.

Bury or burn the old combs AT ONCE, not the next day.

Take great care that no honey, not even the smallest drop, from the diseased colony be exposed to robbers, or the disease may be carried back to the healthy colonies.

If no honey is being gathered from the flowers the treated colonies should be fed at least until they have built the hive full of combs.

More complete information may be had upon application to this Office.

BEEKEEPING IN TENNESSEE: ITS PRESENT CONDITIONS AND FUTURE POSSIBILITIES.

At the present time Tennessee ranks fifth in the honey producing States of the Union. Few people not having the chance to study the beekeeping interests in Tennessee know to what proportions they have attained. Honey production in the State has never been brought properly before the beekeeping world and in a general way little is known as to what is really being done in this line of business by the people of the State. It may be interesting to cite a few figures in regard to the present conditions

as obtained from a careful survey of the beekeeping interests from data in the Office of the State Entomologist.

At present there are 144,479 colonies of bees in Tennessee. Estimated at \$3.50 per colony, their value would be \$505,676.50. The amount invested in honey houses and other apparatus connected with beekeeping, exclusive of hives, would doubtless approximate 6 per cent of this amount, or \$30,340.59. From statements received from 1,006 beekeepers in the State it is found that the average yield per colony is 30 lbs. of honey. This makes the production of the 114,470 colonies 4,334,370 lbs. of honey, which



Tennessee Honey Exhibit at Tri-State Fair, Memphis, Oct. 1911 (Original)

at an average price of 12½c per lb. aggregates \$541,796.25. There are also sold in the State annually \$2,500 worth of queens. At present there is no accurate estimate of the beeswax produced, but the amount is considerable, selling as it does for 28c and 30c per lb. As a total we thus find the annual output of the beekeeping industry in Tennessee to be—

Bees	\$ 505,676.50
Appliances	30,340.59
Honey	541,796.25
Queens	2,500.00
Total.....	\$1,080,313.34

These figures in a conservative way serve to show the importance of the industry of beekeeping as it is in Tennessee today.

The prospects for the development of this profitable and delightful industry in Tennessee are very good. The passage of a bill by the last Legislature means much in the building up and fostering of beekeeping:

"AN ACT to suppress infectious and contagious diseases of bees; to provide for an inspector of apiaries, to define his powers and duties, and to define certain misdemeanors and provide punishment therefor." (Chapter 50, Acts of 1911.) Sections 1 and 2 give the general scope of the Act:

"Section 1. Be it enacted by the General Assembly of the State of Tennessee, That within thirty days from the passage of this Act, the Commissioner of Agriculture shall appoint a duly qualified and competent Inspector of Apiaries whose duties it shall be to inspect the bees of the State as prescribed in this Act; and such Inspector of Apiaries shall act under the authority and supervision of the State Board of Entomology.

"Section 2. Be it further enacted, That upon receiving information from any source, of the existence of diseases in any apiary in the State, the Inspector of Apiaries shall examine such apiary, and all others in the same locality, and shall ascertain whether or not the disease known as Foul Brood, or any other disease which is infectious or contagious in its nature, and injurious to honey bees, exists in such apiaries, and shall designate each colony and apiary which he finds infected, and shall notify the owner or the person in charge of such bees thereof; and the owner or person in charge of such bees shall at once practically and in good faith, apply, and thereafter fully carry out upon such diseased bees, such treatment, as may have been prescribed by the Inspector for such cases; and shall also thoroughly disinfect to the satisfaction of the Inspector, all bee hives, combs, honey and apparatus used in connection with such diseased bees; or the said owner or person in charge may, at his election utterly destroy by fire all such infected bees, hives, combs, honey and apparatus."

This work of apiary inspection was begun during the summer of 1911 and 70 apiaries in different parts of Middle and West Tennessee, representing some 800 colonies, were inspected. Of

this number 14 apiaries were found diseased with the American foul brood, a bacterial disease of bees which if left untreated will scatter readily and mean a total loss to the apiary and in time ruin the entire beekeeping interests of the State. The cases of diseases found were not highly advanced and have been thoroughly treated and eliminated. During the coming season the remaining apiaries of the State will be carefully inspected. This important work, together with precautions, means that the industry will be greatly fostered and extended throughout the State. It has been due to these bacterial diseases and poor management that many beekeepers in the past have found it impossible to get the greatest yields of honey.

Many sections of Tennessee are admirably adapted to the keeping of bees, in that clover grows luxuriously. Leaving these regions we find the beekeepers producing honey profitably from poplar, lynn, cotton, sourwood, aster, etc. The largest honey producers in the State, with very few exceptions, produce extract honey. The bulk of the honey produced is consumed in the State and large shipments are made to Tennessee from California and Texas. The possibilities of the beekeeping interests of the State are exceptionally good, they being not only fostered by State aid in the control of diseases, but also by the introduction of modern appliances and methods of management. As a rule the beekeepers are extending their business and this will continue to be enlarged as attention is directed to them. The beekeepers who will not give their bees care and attention and who still adhere to the log and plank gums will soon be driven out of business and in their place those making a study of the industry and using modern hives and appliances will push on to the front. The market for honey throughout the State is exceptionally good. The writer has been surprised many times to find comb honey selling in the cities during holiday seasons for 35c and 40c per lb. The average price for extract honey in the State is from 12½c to 15c. In Texas, where the bulk of the honey is produced in the United States and where much of it is sold at wholesale, the average price is only 6c per lb.

More attention is being paid to modern hives and the improved strains of bees than ever before. There are at present

several firms in the State selling bee supplies, and besides, many agents are selling for outside firms. Few beekeepers today are keeping the Black or German bees. These have been exchanged for more gentle bees—the three-banded, five-banded, and golden Italian and the Carniolians.

In March, 1907, the State Beekeepers' Association was founded at the conclusion of a short course in beekeeping at the University of Tennessee. This organization has grown rapidly, at present having over one hundred active members. This year the most successful meeting of the organization was held in conjunction with the State Nurserymen's Association and the State Horticultural Society, January 25, 26 and 27, 1912. The organization has for its object the building up of this somewhat neglected interest in the State and is bringing to its members the most approved and up-to-date methods of the modern beekeepers. For three years short courses in apiculture were conducted at the University of Tennessee in connection with the regular short courses during the winter. The demand for these courses has increased and it is expected they will be continued in the future with larger attendance than ever before. There are thirty-five of the largest beekeepers in the State now belonging to the National Beekeepers' Association. Several of these annually attend the convention of this National organization.

The correspondence coming into the Office of the State Entomologist in regard to beekeeping is increasing each year. Some of the advantages in this State over those of the colder States are, that it is not necessary for the beekeepers in Tennessee to solve the wintering problem; the colonies do well out-of-doors during the winter. The great number of growing days in the State make it possible for bees to gather honey as late as the latter part of November. The honey plants are varied, coming in bloom at different times of the year. The apiaries are located in various parts of the State; we find them on tops of mountains, in the valleys, and in the level sections. The accompanying map shows the location of the larger apiaries of the State.

Every inducement is offered to the energetic beekeeper who understands and loves the bees and is willing to make an effort to assist them in caring for their store of honey.

FILL OUT, DETACH AND RETURN THIS SHEET.

This Office is interested in gathering full information concerning the beekeeping industry in this State, and will greatly appreciate your interest in carefully filling out and returning the blank below. From the information thus compiled we may be able to deduce some conclusions that will be of benefit to those engaged in this work. Any special information not covered by these questions will be welcomed.

STATE ENTOMOLOGIST,
Knoxville, Tenn.

Name..... Date.....

P. O..... R. D. No..... County.....

1. How many hives of bees have you?.....
2. Do you sell honey or produce it only for home use?.....
3. What breed, race, strain, or variety of bees do you keep?.....
4. What is your average yield per hive each year?.....
5. Do you mind stating the highest and lowest prices commonly paid for honey in your locality?.....
6. What are the principal plants from which honey is made in your locality?
7. What plant do you consider makes the best quality of honey in your locality?
8. What plant do you consider yields the largest quantity of honey in your locality?.....
9. Do you keep the bees in hollow-log gums or in hives? If in hives, what type of hive do you use?.....
10. Are your bees troubled with foul brood, black brood, bee moth, paralysis, or other enemies? If so, state the nature of the trouble.
11. Do you subscribe for any of the beekeeping journals? If so, for which ones?.....
12. Please send us the names and addresses of persons whom you know in this State who keeps bees in quantities of six or more colonies

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REPORT OF APIARY INSPECTOR.

I have the honor to submit the following report:

The Department of Apiary Inspection, of the State Board of Entomology, was organized May 1, 1911, in accordance with Chapter 50 of the Acts of the 57th General Assembly.

During the season of 1911 inspections have been made in 70 apiaries, containing a total of about 800 colonies. The number of diseased apiaries found was 14. Number of colonies treated, 41. Colonies destroyed, none. American foul brood was located in Hamilton, Giles, Lawrence, Williamson, and Roane Counties, and European foul brood in Anderson, Montgomery, and Shelby Counties. Most of these cases have been cleaned up, and the bees are now in a healthy condition. However, a few reports of disease were received too late in the season to admit of successful treatment and these will be attended to in the early spring.

A card index has been prepared, containing the names and addresses of over a thousand beekeepers in the State, together with the number of colonies, their condition, etc. This will be added to from time to time.

The honey crop for the past two seasons has been very light in some parts of the State, and the loss of bees during last winter was heavy. This was caused in most cases by starvation, although some of the loss was due to disease.

Respectfully submitted,

J. M. BUCHANAN,
State Inspector of Apiaries.

Franklin, Tenn., Dec. 1, 1911.

COTTON BOLL WEEVIL QUARANTINE FOR TENNESSEE.

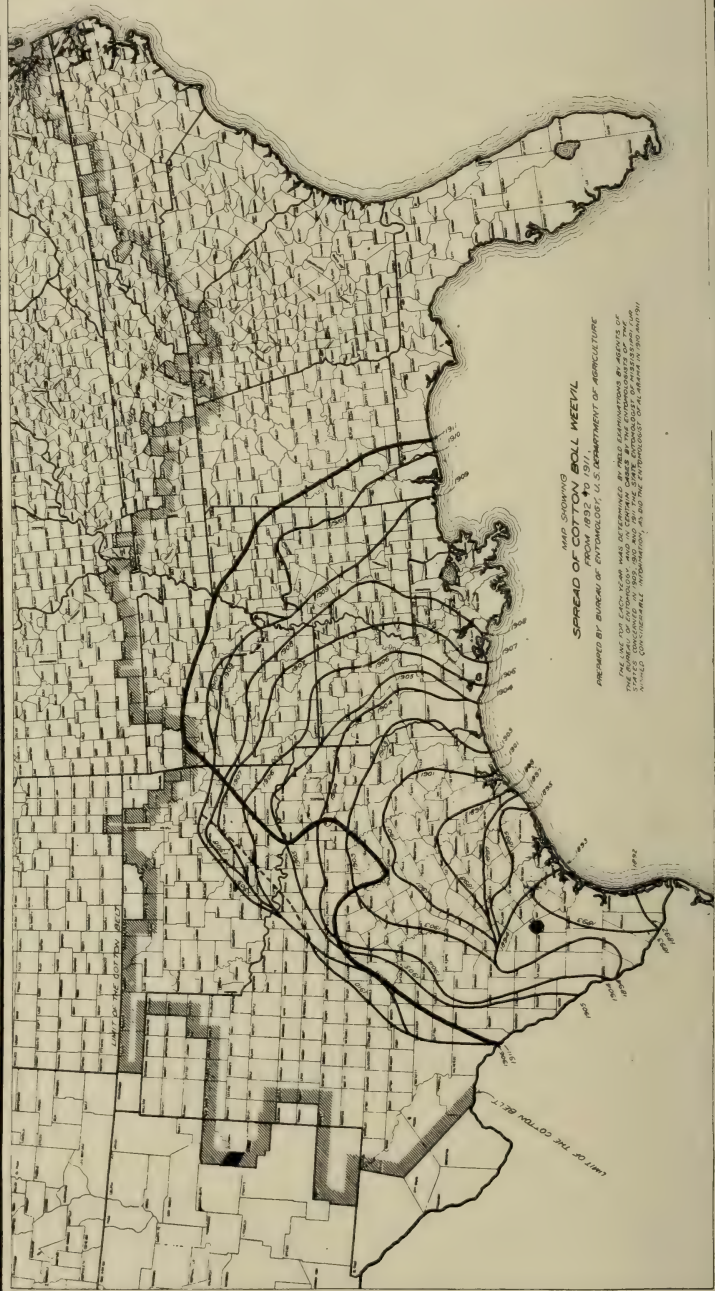
Pursuant to the recommendations of the Association of Cotton States Entomologists held in Atlanta, December 5 and 6, and in Washington, D. C., December 29, 1911, the following restrictions are made on the shipment of the following articles coming from any state partially infested with the Mexican cotton boll weevil (*Anthonomus grandis*):

1. Seed cotton.
2. Cotton seed.
3. Seed-cotton sacks.
4. Cotton-seed sacks.
5. Cotton pickers' sacks, any of which have been used within eight months for any of the purposes indicated.
6. Cotton-seed hulls between Aug. 1 and Dec. 31.
7. Spanish moss and corn in shucks between Oct. 1 and June 30.
8. Living weevil or weevil stages or weevil work in possession of any person outside of the infested territory except a qualified entomologist.
9. Household goods containing any of the foregoing, during the period of quarantine applied to each.

There are no restrictions placed upon the following items at any season:

1. Baled cotton, flat or compressed.
2. Linters and loose cotton lint.
3. Cotton-seed meal, cake and oil.
4. Corn shelled or in the ear, with shuck removed, oats or any other seed except cotton seed.
5. Cotton seed shown by affidavit to have been sacked continuously for nine months or more.
6. Cotton seed for planting purposes after fumigation with carbon dioxide by a competent entomologist.
7. Hay.
8. Empty freight cars.

The principal object of the Association of Cotton States Entomologists is to secure uniformity of state laws in regard to the cotton boll weevil quarantine.



Cotton Boll Weevil dissemination

The cotton boll weevil has not as yet been found in Tennessee. Its nearest approach is in De Soto County, Mississippi. The distance between the last dispersion line, made in November by the U. S. Bureau of Entomology, to Memphis is ten miles. The accompanying map shows the dissemination of the weevil since 1892, the heavy line indicating its limits for 1911.

NOTICE.

The following bulletins have been issued by the Tennessee State Board of Entomology and copies will be mailed to anyone writing for the same. Address Tennessee State Board of Entomology, Knoxville, Tenn.

Bulletin No. 1. Law creating the Tennessee State Board of Entomology—Rules and Regulations.

Bulletin No. 2. The Fumigation of Nursery Stock—Law and Amended Rules and Regulations.

Bulletin No. 3. The Control of Insects, Fungi and Other Pests.

Bulletin No. 4. The San Jose and Other Injurious Scale Insects of Tennessee, with Methods for Their Control.

Bulletin No. 5. Orchard Management in Tennessee.

First Annual Report of the State Entomologist and Plant Pathologist, 1905.

Second Annual Report, 1906.

Third Annual Report, 1907.

Fourth Annual Report, 1908.

Fifth Annual Report, 1909.

Sixth Annual Report, 1910.

SUGGESTIONS ON MAILING SPECIMENS.

Questions pertaining to insects and plant diseases will be gladly answered. All requests should be accompanied by specimens. These should be sent, not in a letter, but in a tight tin or

wooden box with no openings, addressed to the State Board of Entomology, University of Tennessee, Knoxville, Tenn. If possible, send some of the food of the insects, together with their work. Wrap all neatly, placing your own name upon the package. In a letter tell all you have noticed about the insect, as to its food, its first appearance, abundance, extent of injury, etc.

A collection of Tennessee insects is being made, and any assistance in adding to this collection will be greatly appreciated.

TENNESSEE
STATE BOARD OF ENTOMOLOGY

BULLETIN No. 6

Amended Law Creating the Tennessee
State Board of Entomology

AMENDED RULES AND REGULATIONS

APIARY INSPECTION LAW



KNOXVILLE, TENNESSEE

June, 1912

TENNESSEE STATE BOARD OF ENTOMOLOGY

T. F. PECK, Commissioner of Agriculture, Chairman.....Nashville
G. M. BENTLEY, SecretaryKnoxville

STAFF

G. M. BENTLEY, State Entomologist and Plant Pathologist
C. R. SPANGLER, Assistant Nursery Inspector
J. M. BUCHANAN, Apiary Inspector

All communications should be addressed to the
STATE ENTOMOLOGIST AND PLANT PATHOLOGIST, Knoxville.

TENNESSEE STATE BOARD OF ENTOMOLOGY

Bulletin published quarterly at Knoxville

G. M. BENTLEY, State Entomologist and Plant Pathologist

*Application for entry as second-class matter at the
Post office, Knoxville, pending.*

AMENDED LAW AND RULES AND REGULATIONS. LAW.

AN ACT to create a State Entomologist and Plant Pathologist; to provide quarantine rules and other rules and regulations regarding the sale, transportation, and delivery of trees, shrubs, vines, plants or plant products so as to prevent the dissemination of injurious insect pests, also to amend said Acts so as make it unlawful for any person, firm or corporation to knowingly grow, sell, offer for sale, or give away, transport, keep or permit to be kept, any plants, trees, shrubs, vines, or any part of a plant infested with injurious insects, insect pests, and contagious plant diseases, and to otherwise provide for the duties and powers of said State Entomologist and Plant Pathologist, and to regulate the sale and transportation and inspection of trees, roots, bulbs, plants, and plant products.

Approved April 17, 1905, Amended July 6, 1911. (See pages 68 and 69.)

QUARANTINE.

SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee, That it shall be unlawful for any person, firm, or corporation knowingly to grow, sell, offer for sale, give away, transport, keep or permit to be kept upon his or their premises any plants, trees, shrubs, vines, or any part of a plant infested with injurious insect pests and contagious plant diseases.*

INSPECTION.

SEC. 2. *Be it further enacted, That within thirty days after the passage of this Act the Commissioner of Agriculture shall appoint a competent Entomologist and Plant Pathologist, subject to the approval of the Governor, and necessary assistants, who shall, under the authority of said Commission, be charged with the duty of inspecting trees, vines, shrubs, plants, or any part thereof as prescribed in this Act.*

THE BOARD AND ITS POWERS.

SEC. 3. *Be it further enacted, That the Commissioner of Agriculture and said State Entomologist and Plant Pathologist, who shall constitute and be designated as the "State Board of Entomology," shall have plenary power to enact such rules and*

regulations for the enforcement of the provisions of this Act as may be necessary to prevent, control, and eradicate the further introduction, increase, and dissemination of insect pests and fungous diseases, which otherwise would threaten the fruit and other agricultural interests of the State.

DUTIES OF ENTOMOLOGIST.

SEC. 4. *Be it further enacted*, That it shall be the duty of the State Entomologist and Plant Pathologist, or his assistants, to inspect annually, or oftener, if necessary, all greenhouses and nursery stock grown within the bounds of the State prior to September 1st of each year, and he or they shall issue a certificate of freedom from insect pests and plant diseases to the owner or lessee of any greenhouse or nursery, or other persons who give away, sell, or transport nursery stock, found entitled to the same. All certificates of inspection shall be given not later than November 1st of each year, and shall become void after August 1st of the year following. A duplicate copy of each certificate shall be filed by the State Entomologist and Plant Pathologist with the Commissioner of Agriculture not later than thirty (30) days from the time of issue.

EXAMINATIONS TO BE MADE.

SEC. 5. *Be it further enacted*, That it shall be lawful for the State Entomologist and Plant Pathologist, acting under the authority of the State Board of Entomology, or his assistants or authorized agents, to visit any section of the State and examine any or all fruit-bearing, ornamental, or shade trees, or any field truck crop or garden crops, or any plants or parts thereof, of any description whatsoever, and determine whether infectious diseases exist or not. If discovery is made of injurious insect pests or fungous diseases, a report in writing of such finding shall be made to the owner of the infested plantation, his agents or tenants, and a copy of such report shall be filed with the State Board of Entomology. If any objections are made against the findings of the State Entomologist and Plant Pathologist, or any of his authorized assistants, such objections must be made in writing within (10) ten days of the finding, to the said Board, who shall have power to summon witnesses and hear testimony on oath, and whose decision shall be final. Any person or persons who shall inter-

fere with the duties of said Entomologist and said Board, as prescribed in this section, shall be considered guilty of a misdemeanor, and he or they shall be fined not less than twenty-five (\$25) dollars, nor more than fifty (\$50) dollars for each offence.

AS TO TREATMENT OF INFESTED STOCK.

SEC. 6. *Be it further enacted*, That upon discovery by the State Entomologist and Plant Pathologist of dangerous insect pests and fungous diseases, whether in greenhouses and nurseries or in public or private domain, the treatment prescribed by the State Entomologist and Plant Pathologist shall be executed at once (provided there is no appeal), and under his supervision. If the case in question is worthy of remedial treatment, the cost of the material and the labor shall be borne by the owner. In case infected stock is not worthy of remedial treatment, such infectious plants shall be placed under the jurisdiction of the Board of Control.

WHEN NURSERY STOCK CAN NOT BE SHIPPED.

SEC. 7. *Be it further enacted*, That it shall be unlawful for any grower, nurseryman, florist, dealer, or corporation to ship, sell, or deliver within the State any trees or plants of whatever description without having been previously inspected by the State Entomologist and Plant Pathologist, or his authorized assistants and a certificate placed upon each bundle, package, bale, box or car load of shipment.

PENALTY.

Any violation of said certificate by changing, defacing, or placing it on uninspected or infested stock, or using the same after date of expiration or revocation, shall render the owner or shipper liable to a fine of not less than one hundred (\$100) dollars nor more than one hundred and fifty (\$150) dollars for each offense; [*Provided*, that the provisions of this Act shall not apply to farmers or small growers who may sell plants, flowers, or shrubs in their own counties].

SECTION 7 AS AMENDED.

Section 1. *Be it enacted by the General Assembly of the State of Tennessee*, That Section 7 of Chapter 466 of the printed Acts of 1905 of Tennessee be amended by striking out the words beginning with "provided" on page 984 and ending with "counties" on the same page.

NURSERYMEN TO REGISTER THEIR NAMES.

Sec. 8. *Be it further enacted*, That each and every individual, firm or corporation residing in other States, Territories, Provinces, etc., dealing in or handling trees, plants, vines, shrubs, bulbs, roots, cuttings, etc., before shipping into the State, shall register his name, firm, or corporation, and file a copy of his or its certificate of inspection, furnished by the Entomologist, fruit inspector, or duly authorized Government official of his State, county, or province, with the Secretary of the State Board of Entomology. All packages, boxes, bales, car loads of plants, commonly known as greenhouse or nursery stock, imported into the State shall be plainly labeled on the outside with the names of the consignor and consignee, and a certificate showing that the said contents had been inspected by a reputable State or Government official. Upon the failure of any person or persons to subscribe to the declarations set forth in this section, said stock shall be confiscated under the order of the State Entomologist and Plant Pathologist.

QUARANTINE REGULATIONS.

SEC. 9. *Be it further enacted*, That the Tennessee State Board of Entomology shall have the power to adopt such quarantine rules and other regulations, not inconsistent with the Constitution of the State and the United States, as they may deem necessary to prevent the introduction of dangerously injurious fruit or crop pests, or diseases from without the State, and to govern common carriers in transporting shipments liable to harbor such pests or diseases to or from the State, and such regulations shall have the force of law.

PENALTY.

SEC. 10. *Be it further enacted*, That any agent, common carrier, railroad, steamboat, or express company found delivering within the bounds of the State any plants,* trees, shrubs, vines, cuttings, bulbs, roots, etc., under conditions otherwise than that provided in this Act, shall be found guilty of misdemeanor and fined not less than twenty-five (25) dollars nor more than fifty (\$50) dollars for the first offense, and one hundred (\$100) dollars for each offense thereafter.

FUMIGATION OF NURSERY STOCK.

SEC. 11. *Be it further enacted*, That all nursery stock sold, shipped, or delivered within this State or shipped into this State

*Including strawberry plants, palms, ferns, azaleas, privets, etc.

from other States shall be treated or fumigated as may be required by the regulations of the Tennessee State Board of Entomology hereinbefore provided for.

TREATMENT OF INFECTIOUS DISTRICTS.

SEC. 12. *Be it further enacted*, That upon knowledge coming from any county within the State to the Board of Control that noxious insect pests or plant diseases exist in said county, or in close proximity in an adjoining county, the State Entomology and Plant Pathologist shall be empowered by said Board to investigate as speedily as possible the supposed infectious district; and if, upon examination, dangerous insect pests or infectious plant diseases are disclosed, such infested premises shall be treated in accordance with this Act, as prescribed in Sections 5 and 6.

REPORTS OF STATE ENTOMOLOGIST.

SEC. 13. *Be it further enacted*, That the State Entomologist and Plant Pathologist shall submit to the State Board of Entomology a monthly report of work done; he shall also submit an annual report on or before the first of February of each year to the Governor of the State, embracing a review of inspections and investigations made and the condition of the State relative to insect pests and plant diseases, which shall be published as are other State reports, for general distribution.

APPROPRIATION.

[SEC. 14. *Be it further enacted*, That the sum of two-thousand (\$2,000) dollars annually be, and is hereby, appropriated to the State Board of Entomology in order to carry out the provisions of this Act—namely, to employ a competent State Entomologist and Plant Pathologist; to procure the requisite facilities and equipment necessary for the proper discharge of duties herein incurred; to support a reasonable amount of investigation in addition to the inspection work of the State; and to publish the results of observations and investigations made in bulletin form, which may disseminate information that will prove useful to the agricultural and horticultural interests of the State.]

COMPTROLLER TO DRAW WARRANT.

[SEC. 15. *Be it further enacted*, That the Comptroller of the State be, and is hereby, authorized to issue his warrant upon the State Treasurer for the sum of two thousand (\$2,000) dollars

annually out of any funds not otherwise appropriated; that said sum of money shall be made payable quarterly to the State Board of Entomology and only upon the presentation of proper vouchers.]

SECTIONS 14 AND 15 AS AMENDED.

Section 1. Be it enacted by the General Assembly of the State of Tennessee, That Sections 14 and 15 of Chapter 466 of the printed Acts of 1905 of Tennessee be amended by striking out the words and figures "two thousand dollars" and inserting therein the words "six thousand dollars;" provided, that not more than three thousand dollars of said sum shall be used in the inspection of nursery stock and the work incident thereto, and the remainder to the inspection of orchards and plants and the work incident thereto.

RULES MAY BE ADOPTED BY STATE BOARD OF ENTOMOLOGY.

SEC. 16. *Be it further enacted,* That the State Board of Entomology shall have power to adopt such rules and regulations governing insect and plant pests within the bounds of the State, as are not inconsistent with the Constitution of the State and the United States; that said Board shall, within sixty (60) days from the passage of this Act, draft and publish through the State press all rules and regulations necessary to carry into full and complete effect the embodiment of this Act, cautiously and wisely, outlining the diseases and maladies caused by both insect and fungus, and explaining what constitutes infectious plant diseases in the eyes of the law.

SEC. 17. *Be it further enacted,* That this Act shall take effect from and after its passage, the public welfare requiring it; and that all laws or parts of laws in conflict with this Act are hereby repealed.

CHAPTER 61, ACTS OF 1911.

SENATE BILL 738.

AN ACT to amend an Act entitled "an Act to create a State Entomologist and Plant Pathologist; to provide quarantine rules and other rules and regulations regarding the sale, transportation, and delivery of trees, shrubs, vines, plants, or plant products so as to prevent the dissemination of injurious insect pests; also to amend said Act so as to make it unlawful for any person, firm, or corporation to knowingly grow, sell, offer for sale, or give away, transport, keep, or permit to be kept, any plants, trees, shrubs, vines, or any part of a plant infected with injurious insect, insect pests and contagious insect diseases; and to otherwise provide for the duties and powers of said State Entomologist and

Plant Pathologist; and to regulate the sale and transportation and inspection of trees, roots, bulbs, plants, and plant products," passed by the General Assembly of Tennessee, April 13, 1905, and approved by the Governor, April 17, 1905, being Chapter 466 of the Acts of 1905.

Section 1. Be it enacted by the General Assembly of the State of Tennessee, That Section 7 of Chapter 466 of the printed Acts of 1905 of Tennessee be amended by striking out the words beginning with "provided" on page 984 and ending with "counties" on the same page. Also the Sections 14 and 15 by striking out the words and figures "two thousand dollars" and inserting therein the words "six thousand dollars;" provided, that not more than three thousand dollars of said sum shall be used in the inspection of nursery stock and the work incident thereto, and the remainder to the inspection of orchards and plants and the work incident thereto.

Sec. 2. Be it further enacted, That all laws or parts of laws in conflict herewith be, and the same are, hereby repealed, and that this Act take effect from and after its passage, the public welfare requiring it.

Passed July 1, 1911.

Approved July 6, 1911.

AMENDED RULES AND REGULATIONS OF STATE BOARD OF ENTOMOLOGY.

In compliance with the requirements of an Act of the General Assembly of the State of Tennessee (S. B. No. 442 Chap. 466), approved April 17, 1905, entitled "An Act to Create a State Entomologist and Plant Pathologist," etc., also S. B. 738 Chap. 61 Acts of 1911, approved July 6, 1911, An Act to amend an Act, the State Board of Entomology, established and amended by said Acts announces the following Rules and Regulations. These Rules and Regulations are subject to revision and change, without notice, as experience may warrant. It should be understood that the State Board of Entomology, in undertaking the work entrusted to it by law, is inspired with the purpose of aiding in every legitimate way the business interests primarily involved. The rules herein promulgated have been adopted after a careful consideration of the regulations of adjoining States governing nursery and greenhouse inspection, and it is believed that they are not more burdensome than the ends in view demand:

1. The following insects and fungous diseases are declared to constitute infestation in trees and plants:

San Jose scale (*Aspidiotus perniciosus*).

West Indian peach scale (*Aulacaspis pentagona*).

Woolly aphis (*Schizoneura lanigera*).

Mexican cotton boll weevil (*Anthonomus grandis*).
 Gypsy moth (*Porthetria dispar*).
 Brown-tail moth (*Euproctis chrysorrhoea*).
 Black knot of cherry and plum (*Plowrightia morbosa*).
 Crown gall (*Bacterium tumefaciens*).
 Hairy root. (*Bacterium tumefaciens*).
 Rosette of peach and plum.
 Yellows of peach.
 White Pine Blister Rust (*Peridermium strobi*).

2. Every person, firm, or corporation desiring to conduct the business of a nursery or to sell fruit and ornamental trees and plants, commonly known as nursery stock, this includes strawberry plants, shall apply to the State Entomologist, Knoxville, Tenn., on or before July 1 of each year for inspection of their nursery stock; and they shall inform the State Entomologist of the location of the nursery or nursery stock to be inspected, its acreage, extent and amount, so that arrangements can be made for the prompt inspection.

Notification for an inspection coming to the Office of the State Entomologist later than July 1, will be considered as a special inspection, the costs for which will be met by the grower. The regular inspections are made by the State.

3. Nursery stock is construed to include all fruit, shade, ornamental, and nut trees, bush fruits, grapevines, and strawberry plants, and all buds, grafts, scions, and cuttings from same.

4. By the amendment of Section 7 of the Law, all strawberry plants, sold, given away or exchanged, have to be inspected. This inspection is for all plants sold at home in one's own county as well as those shipped. It includes the small grower as well as the large grower.

5. *In accordance with Section II of the Law, all trees, buds, grafts, scions, or cuttings of apple, apricot, cherry, peach, pear, plum, and quince, which shall be sold in the State of Tennessee shall be fumigated immediately before shipment or delivery with hydrocyanic acid gas. Formula: 1 oz. potassium cyanide, 2 oz. sulphuric acid and 4 oz. Water.*

At the time of the nursery inspection the fumigating house or box shall also be inspected and must be found in a satisfactory condition; otherwise no certificate can be granted.

6. No person, firm or corporation shall sell, offer for sale, exchange, barter, or give away any nursery stock grown within the State of Tennessee, unless in possession of a valid certificate of inspection previously obtained from the State Board of Entomology.

7. The State Entomologist, or his assistants, shall, on or before November 1 of each year, inspect all nurseries and nursery stock within the State, and if found free of infestation a certificate of inspection shall be issued, covering same, good until August 1 of the year following.

8. If infestation is found in any nursery, greenhouse, or nursery stock, the certificate shall be withheld until the premises have been so treated that the salable stock to be covered by said certificate shall be free from such infestation; and such treatment shall be prescribed by the Entomologist making the inspection.

In case part of a nursery shall be found infested, no certificate shall be granted, but isolated blocks of nursery stock not infested may be considered as separate nurseries, and a certificate covering such stock may be issued after all the infested blocks have been treated as ordered by the inspector. If in the judgment of the inspector infested stock is in so bad a condition as to be unworthy of remedial treatment, it shall be destroyed, subject to appeal as provided by law.

9. On complaint to the State Entomologist by any citizen that infestation exists in any orchard, garden, or other grounds, said grounds shall be inspected by the Entomologist or his assistants. If the infested plants can be saved by remedial action, the inspector shall prescribe treatment, but if the infestation is so great that, in the judgment of the inspector, the plants are not worth treatment, they shall be destroyed at the expense of the owner. Appeal can be made to the State Board of Entomology, as provided by law.

10. Every car-load, box, bale, or delivery of nursery stock which is sold, exchanged, etc., by any person, firm or corporation within the State of Tennessee, shall be accompanied by a copy of the certificate of inspection, conspicuously and securely attached. This means that every individual sale or bill of trees shall bear a copy of the certificate. Any nursery stock not thus marked is liable to be destroyed without compensation to the consignor, who is further liable to a fine of not less than \$100.00. No transportation company,

or agent thereof, may accept for shipment any nursery stock not accompanied by a copy of certificate of inspection.

11. Any person, firm or corporation without the State of Tennessee, desiring to do business within this State, shall file with the State Entomologist and Plant Pathologist (who is also Secretary of the Board), Knoxville, Tenn., a copy of his certificate of inspection, issued and signed by the proper official of his State. Also an agreement to fumigate with hydrocyanic acid gas, all stock shipped into the State. And every shipment of nursery stock into the State of Tennessee must be accompanied by a copy of such certificate of inspection, and a fumigation tag.

12. Shipments of nursery stock not properly labeled shall be refused for shipment by all common carriers and their agents. Transportation companies and their agents shall immediately notify the State Entomologist and Plant Pathologist, Knoxville, Tenn., when by oversight, negligence or otherwise any shipment of nursery stock without a proper certificate attached shall arrive at any station or wharf in this State, and it shall be the duty of the Entomologist and Plant Pathologist or his assistants as speedily as possible to investigate and dispose of such shipment.

13. In accordance with Section 9 of the Law, and in order to prevent the importation of the Mexican cotton boll weevil into Tennessee from the infested areas, a quarantine is hereby declared against the States in which boll weevil, (*Anthonomus grandis*) is known to occur.

COTTON BOLL WEEVIL QUARANTINE FOR TENNESSEE.

Pursuant to the recommendations of the Association of Cotton States Entomologists held in Atlanta December 5 and 6, and in Washington, D. C. December 29, 1911, the following restrictions are made on the shipment of the following articles coming from any State partially infested with the Mexican cotton boll weevil (*Anthonomus grandis*):

1. Seed cotton
2. Cotton seed
3. Seed-cotton sacks.
4. Cotton-seed sacks.
5. Cotton pickers sacks, any of which have been used within eight months for any of the purposes indicated.
6. Cotton-seed hulls between Aug. 1, and December 31.

7. Spanish moss and corn in shucks between Oct. 1, and June 30.
8. Living weevil or weevil stages or weevil work in possession of any person outside of the infested territory except a qualified entomologist;
9. Household goods containing any of the foregoing, during the period of quarantine applied to each.

There are no restrictions placed upon the following items at any season:

1. Baled cotton, flat or compressed.
2. Linters and loose cotton lint.
3. Cotton-seed meal, cake and oil.
4. Corn shelled or in the ear, with shuck removed, oats or any other seed except cotton seed.
5. Cotton seed shown by affidavit to have been sacked continuously for nine months or more.
6. Cotton seed for planting purposes after fumigation with carbon dioxide by a competent entomologist.
7. Hay.
8. Empty freight cars.

The principal object of the Association of Cotton States Entomologists is to secure uniformity of State laws in regard to the cotton boll weevil quarantine.

The cotton boll weevil has not as yet been found in Tennessee. Its nearest approach is in De Soto County Mississippi. The distance between the last dispersion line, made in November by the U. S. Bureau of Entomology, to Memphis is ten miles.

APIARY LAW.

CHAPTER 50, ACTS OF 1911.

HOUSE BILL NO. 70

AN ACT to suppress infectious and contagious diseases of bees; to provide for an inspector of apiaries, to define his powers and duties, and to define certain misdemeanors and provide punishment therefor.

COMMISSIONER APPOINTS

SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee, That within thirty days from the passage of this Act, the Commissioner of Agriculture shall appoint a duly qualified and competent Inspector of Apiaries whose duties it shall be to inspect the bees of the State, as prescribed in this Act;*

and such Inspector of Apiaries shall act under the authority and supervision of the State Board of Entomology.

EXAMINATIONS.

SEC. 2. *Be it further enacted*, That upon receiving information from any source, of the existence of disease in any apiary in the State, the Inspector of Apiaries shall examine such apiary, and all others in the same locality, and shall ascertain whether or not the disease known as Foul Brood, or any other disease which is infectious or contagious in its nature, and injurious to honey bees, exists in such apiaries, and shall designate each colony and apiary which he finds infected, and shall notify the owner or person in charge of such bees thereof; and the owner or person in charge of such bees shall at once practically and in good faith, apply, and thereafter fully carry out upon such diseased bees, such treatment, as may have been prescribed by the Inspector for such cases; and shall also thoroughly disinfect, to the satisfaction of the Inspector, all bee hives, combs, honey and apparatus used in connection with such diseased bees; or the said owner or person in charge may, at his election utterly destroy by fire all such infected bees, hives, combs, honey and apparatus.

AUTHORITY OF INSPECTOR.

SEC. 3. *Be it further enacted*, That the Inspector of Apiaries or his deputy or assistant shall have the right to enter the premises of any beekeeper where bees are kept, and inspect such bees, and any person resisting or refusing to allow such inspection, shall be guilty of a misdemeanor, and upon conviction, shall be punished by a fine of not less than five dollars nor more than twenty-five dollars.

TREATMENT OF DISEASED APIARIES.

SEC. 4. *Be it further enacted*, That any owner or keeper of bees who shall be notified by the Inspector of Apiaries, that Foul Brood or any other infectious or contagious disease exists in any of the hives in his apiary, and who shall within ten days from the time of receiving such notification fail or refuse to treat or destroy such bees, hives, combs, or appliances, shall be guilty of a misdemeanor, and upon conviction, shall be punished by a fine of not less than five dollars, nor more than twenty-five dollars.

SALE OF INFECTED BEES.

SEC. 5. *Be it further enacted*, That any person who shall

knowingly sell , give away, or offer for sale, or who shall expose in his apiary or elsewhere, any infected bees, hives, combs, honey or other infected thing, or shall conceal the fact that Foul Brood or other disease exists in his apiary, shall be guilty of a misdemeanor, and upon conviction, shall be punished by a fine of not less than five dollars nor more than twenty-five dollars.

TRANSFER OF DISEASED BEES.

SEC. 6. *Be it further enacted*, That the Inspector of Apiaries shall have full power, in his discretion, to order any owner or keeper of bees, dwelling in box hives, in apiaries where disease exists, to transfer such bees to movable frame hives within a specified time, and in default of such transfer, the Inspector may order the destruction of such box-hives and the bees dwelling therein.

CERTIFICATES REQUIRED ON BEES COMING INTO TENNESSEE.

SEC. 7. *Be it further enacted*, That any person, firm or corporation who shall bring into the State of Tennessee, any colony or colonies of bees, shall immediately notify the Inspector of Apiaries of such fact, stating where such bees are being kept, and shall at the same time file with the said Inspector a certificate from the duly appointed Inspector in the County or State from which such bees were shipped, stating that such colony or colonies are free from any infectious or contagious disease; and in default of such certificate it shall be the duty of the Inspector of Apiaries to proceed to examine such bees, and ascertain whether they are free from Foul Brood or other disease. Any person, firm, or corporation who shall fail to notify the Inspector as required by this Section, for a period of ten days from the arrival within the State of Tennessee of such colony or colonies of bees, shall be guilty of a misdemeanor, and upon conviction, shall be punished by a fine of not less than five dollars nor more than twenty-five dollars.

INSPECTION REQUIRED OF QUEEN BEES.

SEC. 7. *Be it further enacted*, That any person, firm or corporation engaged in the rearing of queen bees for sale, to use honey for the making of candy for use in mailing cages, which has been boiled for at least thirty minutes. Any person so engaged in the rearing of queen bees shall have his apiary or apiaries inspected at least twice during each summer season, and upon the discovery of any disease which is infectious or contagious

in its nature, and injurious to bees, said person shall at once cease to ship queen bees from such diseased apiary until the Inspector of apiaries shall declare the said apiary free from any disease. Any queen breeder who shall violate the provisions of this section shall be guilty of a misdemeanor, and upon conviction, shall be punished by a fine of not less than five dollars nor more than twenty-five dollars.

PRECAUTIONS OF INSPECTOR.

SEC. 9. *Be it further enacted*, That the Inspector, after inspecting infected bees, or handling infected hives or fixtures, shall, before proceeding to any other apiary, thoroughly disinfect any portion of his person or clothing or any tools used by him which have come in contact with any infected material.

REPORT OF INSPECTOR.

SEC. 10. *Be it further enacted*, That the Inspector of Apiaries shall make an annual report to the Commissioner of Agriculture giving the number of apiaries inspected, the number of diseased apiaries found, the number of colonies treated, and the number of colonies destroyed, and statistics bearing on the bee industry.

SALARY OF INSPECTOR.

SEC. 11. *Be it further enacted*, That the Inspector of Apiaries shall receive a salary of five hundred dollars per annum, together with all necessary expenses while actually engaged in performing his duties under the provisions of this Act, provided such salary and expenses shall not exceed one thousand dollars per annum.

APPROPRIATION TO STATE BOARD OF ENTOMOLOGY.

SEC. 12. *Be it further enacted*, That the sum of one thousand dollars annually be, and is hereby appropriated to the State Board of Entomology, in order to carry out the provisions of this Act.

COMPTROLLER TO DRAW WARRANT.

SEC. 13. *Be it further enacted*, That the Comptroller of the State be, and is hereby authorized to issue his warrant upon the State Treasurer for the sum of one thousand dollars annually, out of any funds not otherwise appropriated; that said sum shall be made payable quarterly to the State Board of Entomology upon the presentation of the proper vouchers.

SEC. 14. *Be it further enacted*, That this Act shall take effect from and after its passage, the public welfare requiring it, and that all laws and parts of laws in conflict with this Act are hereby repealed.

Passed April 6, 1911. Approved April 19, 1911.

TENNESSEE STATE BOARD OF ENTOMOLOGY

EIGHTH ANNUAL REPORT

VOL. I No. 4

OF THE

STATE ENTOMOLOGIST AND PLANT
PATHOLOGIST FOR
1912



KNOXVILLE, TENNESSEE

1913

Tennessee State Board of Entomology

T. F. PECK, Commissioner of Agriculture.....*Chairman*
Nashville

G. M. BENTLEY, State Entomologist and Plant Pathologist,
Secretary, Knoxville

All communications should be addressed to the

STATE ENTOMOLOGIST AND PLANT PATHOLOGIST
Care of University of Tennessee,
Knoxville, Tenn.

TENNESSEE STATE BOARD OF ENTOMOLOGY

Bulletin published quarterly at Knoxville

G. M. Bentley, State Entomologist and Plant Pathologist

Entered as second-class matter, February 21, 1912, at the Post office at Knoxville,
Tennessee, under the Act of July 16, 1894.

Letter of Transmittal

KNOXVILLE, TENN., December 31, 1912.

To His Excellency, Ben W. Hooper, Governor of Tennessee:

SIR: I have the honor to submit herewith the Eighth Annual Report of the State Entomologist and Plant Pathologist, in compliance with the requirements of law.

Special mention should be made of the advancement and new lines of work which the State Board of Entomology has taken up during the past year. The increased appropriation has made it possible to do very thorough inspection work in the 351 nurseries of the State. Some 500 orchards have been carefully inspected for harmful insect pests and plant diseases. Trees past remedial treatment have willingly been taken out by the owners and new, vigorous ones put in their place. Among these orchardists spraying has been adopted with highly beneficial results. All the foreign nursery stock coming into the State has been carefully inspected for the White Pine Blister rust, the San Jose scale, the winter nests of the Brown tail moth and the egg masses of the Gypsy moth. The shipments of ornamental and fruit trees coming to Tennessee from outside nurseries in many cases have been inspected and found in the best of condition. The efforts of the Board have been influential in advancing the horticultural, agricultural and bee-keeping interests of the State. To-day thousands of farmers, fruit growers, beekeepers and those dwelling in towns and cities are deriving information from the Board. The correspondence has greatly increased during the past year. Some days as many as 100 letters are sent out in reply to that day's correspondence. The nurseries and orchards of the State have increased both in numbers and acreages, the inspection of the nurseries which require full time of three inspectors during July, August, September and October and the orchards two men during the remainder of the year. The nurseries since 1905, when this Board was established, have increased from 194 to 351. The orchard interests of the State are rapidly reviving, the old abandoned orchard is being cut down or being severely pruned and sprayed. During the months of July and August, of the present year, continuous time of the State Entomologist and Plant Pathologist was devoted to giving talks

and making demonstrations on the Agricultural Special Train concerning economic insects and plant diseases and the best methods of preventing or controlling the same. In the demonstration work spray machines from the simpler to the higher types were shown and their working parts explained, discussions were given on insecticides and fungicides, how best to prepare and apply the same. Representative fruit of Tennessee, both sprayed and unsprayed, were placed on exhibition, together with mounted specimens of beneficial and injurious insects prevalent in the State. The Apiary inspection work has proved of great benefit to the beekeepers of the State. From the inspections made several cases of foul brood, a dangerous bacterial disease of bees, have been located and eradicated. Without the bee inspection work the beekeeping interests of Tennessee would soon be obliterated. Although there has been but two years of the apiary inspection work its influence has already affected the introduction of more modern methods and improved equipment. Very careful estimates for Tennessee based on crop reports and actual insect damage over a series of years show that the loss due to insect pests of farm crops, including fruits, forests and live stock, now reaches the almost inconceivable total of \$9,872,228 annually. A brief resume of the records of damages done by insect pests and of the estimates which form the basis of the above statement may make this alarming fact more convincing. The annual loss in Tennessee from insects destroying crops is as follows:

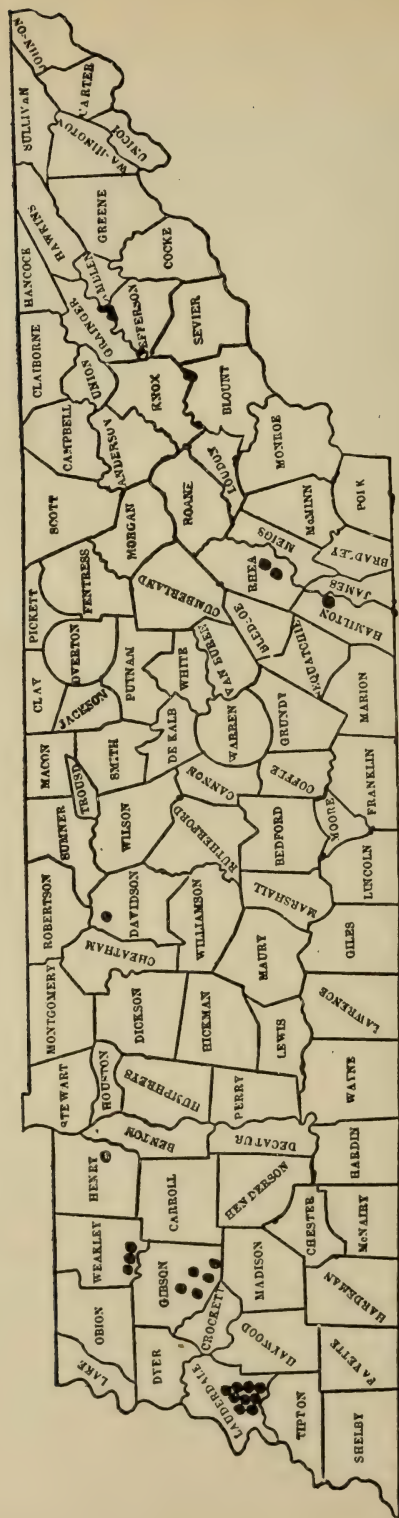
Corn	\$5,558,300
Wheat	794,900
Barley	7,600
Rye	22,400
Buckwheat	3,800
Oats	307,100
Hay and forage crops.....	1,261,800
Tobacco	530,145
Nursery stock, flowers and plants.....	104,200
Strawberries	83,579
Orchards	345,900
Grapes	1,404
Forest and timber products.....	851,100

\$9,872,228

By becoming acquainted with the habits of insects and methods for their control the farmer and fruit grower will be able to save the greater part of this unnecessary loss and by wise legislation to make such laws in regard to their destruction or preservation as will be to the best interests of not only the present, but the future generation.

The Report submitted herewith gives the various heads into which the work of the year may be divided.

G. M. BENTLEY,
State Entomologist and Plant Pathologist.



Black Spots Locate the Present Record of Occurrence of the Strawberry Root-Louse (*Aphis forbesi*, Weed) in Tennessee.

Eighth Annual Report of the State Entomologist and Plant Pathologist for 1912

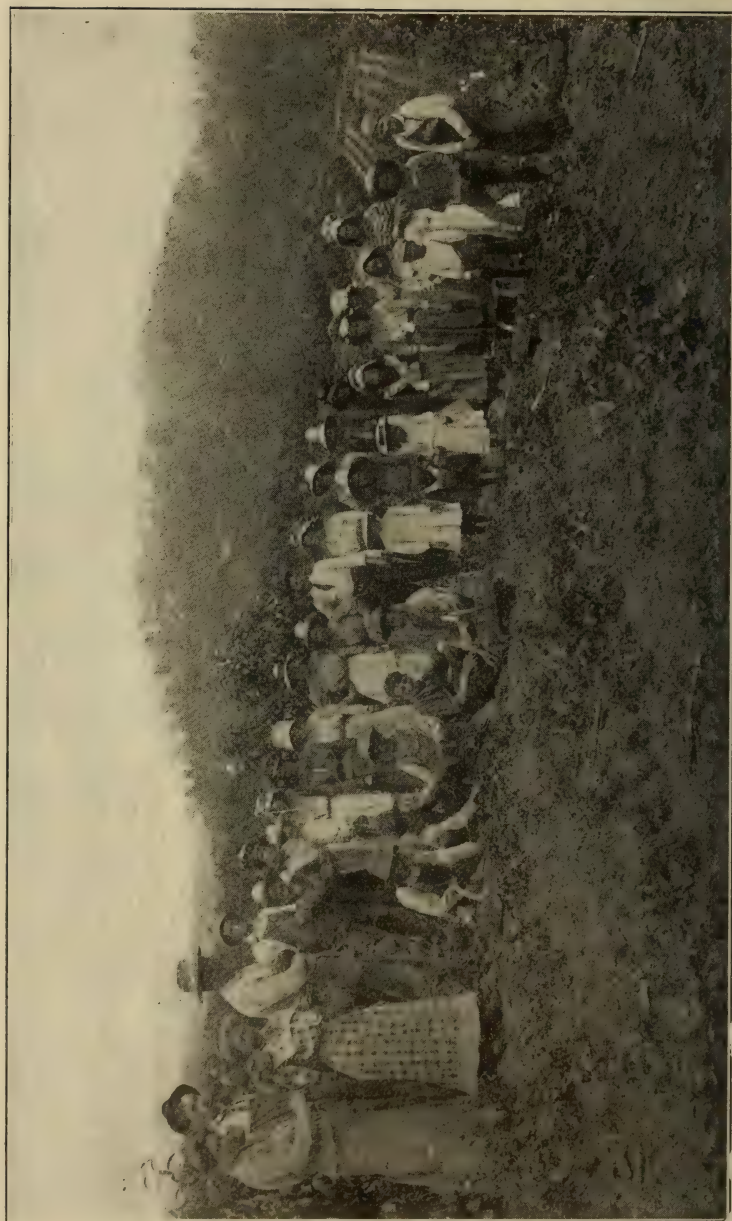
THE STRAWBERRY ROOT-LOUSE, (*Aphis forbesi*, Weed.)

For the first time in Tennessee this insect has been found doing appreciable damage to the strawberry plants. The discovery was made in September during the strawberry plant inspections in Henry County. To avoid any possible mistake in determination, specimens were sent to Dr. L. O. Howard, Chief Bureau of Entomology, Washington, D. C. The accompanying map shows the extent of the present infestation of the strawberry root-louse in Tennessee. Due to infestations ranging from 5% to 75% there are 15 plant growers who were not granted certificates of inspection. Until this year the strawberry root-louse had not been listed with the quarantined insects of the State.

Because of the small size of this aphid and the general appearance to other plant lice little notice has been directed to this pest which has doubtless, in limited quantities, occurred in the State for some years. To illustrate how the strawberry growers look at this insect the following taken from a letter written December 3rd, may be cited: "Dear Sir: I received your letter of the 29th, and also one last Saturday a week ago. And as I stepped out of the post office I met four different strawberry men and showed them your letter and I asked them what they thought of that root-louse. Each man answered the question and they claim that there is nothing like a louse on the root of strawberries; they claim that it is nothing but a dry weather dirt louse which can be found in any loamy rich ground in dry weather." "I don't think that there is any more harm in a ground louse than a man taking a cool drink of water." "You will find just as many ground lice in a corn field or cotton field or potato patch as you will in a strawberry patch if the ground is rich and loamy."

There is but little doubt but that many berry growers think as this man does, hence a brief description and methods of control are given.

When bare spots occur in strawberry patches and the condi-



Strawberries in a Peach Orchard; a Union County Fruit Farm

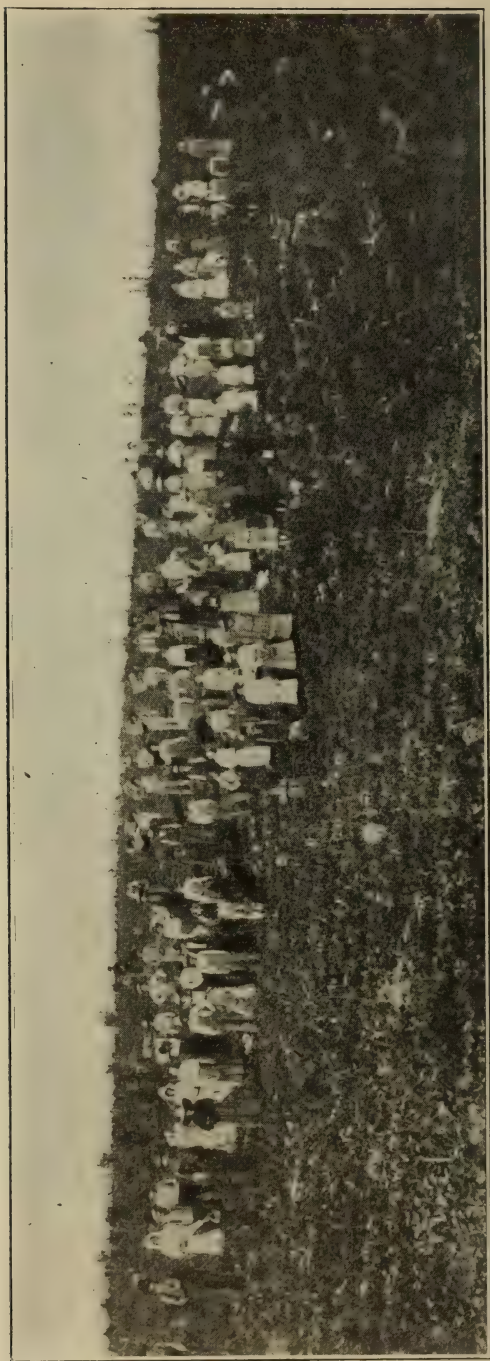
tion of close-by plants indicate lack of vigor it is safe to conclude that the strawberry root aphid is getting in its work. To determine this you have only to pull up several plants and examine the stems, crowns and roots. Finding greenish-black lice about 1/12 inch long on plants more or less wilted should be occasion for sending specimens for determination to your State Entomologist.

The root-louse passes the winter in the egg stage in certain, if not in all parts of the State. Further investigation may prove that this louse passes the winter as adults on the roots in parts of Tennessee. Very small shiny black eggs are deposited on the stems and on the ribs of leaves of the strawberry. These eggs hatch in March or April, depending upon the earliness of spring.

The young feed for a time on the leaves and later seek the more tender leaves at the crown. In about 15 days their growth is attained and they begin to produce from 15 to 20 living young all of which are wingless. It is common to find these wingless aphids accompanied by ants. They are seeking the honey-dew produced by the aphids. Ants actually carry this strawberry louse to the roots of the plants, they also carry them from plant to plant for this generation of the root-louse—wingless as it is, the ant is its only distributing agent. This second generation of aphid in turn produce a third generation, part of which is winged and part wingless; these forms may in like manner produce living young, partly winged and partly wingless. There may be several generations, but at the approach of cold weather true males and females result, and the over wintering eggs are laid.

It is easy to detect the presence of the strawberry root-louse by the condition of the plants. On the roots the lice gather and pierce them sucking out the juices. The plants soon show lack of vigor and wilt and when highly infested die out. Other plants near by start the same way and the berry field may be spotted over with infested areas.

REMEDY: As to methods of control in order to prevent its attack, great emphasis should be placed upon getting plants free from the aphid and then to place them in land not already infested by this pest. It is not safe to replant berries on infested land until it has been in some other crop, preferably two years. As this aphid and its eggs are readily transported on plants, it is import-



Picking Crew on One of Tennessee's Strawberry Farms

ant that plants be obtained from sources known to be free from the attack of this insect. In case there is any doubt, the plants should be either dipped for a few minutes in strong tobacco solution or diluted "Black Leaf 40," or fumigated with hydrocyanic acid gas at the rate of 1 oz. potassium cyanide, 2 oz. sulphuric acid and 4 oz. water per 100 cu. ft., for a period of 10 minutes.

If your fields are highly infested plow and do not plant again for two years, if only slightly infested the tops may be burned over in the early spring. Do not plant a new field near an infested one. Buy only strawberry plants which have been inspected, and which have a certificate accompanying each order.

NURSERY INSPECTION

State nurseries.—The number of inspections made this year is 366, an increase of 1 over last year. In 1905 there were only 194 nurseries in the whole State. Today Tennessee stands foremost of all the Southern States and ahead of many of the Northern States—the annual business aggregating \$3,500,000.

Fifteen nurseries were condemned this year. The total number of nurserymen now holding certificates of inspection is 351. The strawberry root-louse has caused the greater number of the certificate withdrawals.

Outside nurseries.—A large per cent of the stock coming into Tennessee from nurseries outside the State has been looked over. The requirement making it necessary for all NURSERY FIRMS INTENDING TO SHIP INTO THE STATE TO FILE THEIR CERTIFICATES OF INSPECTION SIGNED IN PERSON BY THE STATE ENTOMOLOGIST OR OFFICIAL INSPECTOR AND THEIR AGREEMENT TO FUMIGATE ALL STOCK WITH HYDRO CYANIC-ACID GAS, ATTACHING A FUMIGATION TAG TO EACH SHIPMENT IN THE OFFICE OF THE STATE ENTOMOLOGIST AND PLANT PATHOLOGIST.

Foreign nurseries.—Some twenty of the Tennessee nurserymen have purchased seedlings and propagating material from foreign countries, chiefly France, Germany, Holland and Belgium. All of this material has been carefully inspected for crown gall, white pine blister rust, San Jose scale, brown tail moth winter nests and gypsy moth egg masses. This year these foreign shipments have been exceptionally free from insect pests and plant

diseases. In no shipment has any trouble been found. The foreign inspection tags had been carefully filled out and were intact on each case.

TENNESSEE NURSERYMEN FOR 1912.

The following nurserymen have had their nurseries inspected and have received State certificates permitting them to sell nursery stock until August 1, 1913. This list comprises 351 distinct nurseries, making next to the largest list of inspections ever made in Tennessee. Stock from these nurseries is sold chiefly without the State, less than one-eighth being retained in Tennessee. Trees and ornamental shrubs and vines from Tennessee's nurseries are shipped to all parts of the United States and Canada, as well as to England, France, Germany, Spain and Portugal. One hundred and eight nurseries, mostly strawberry plant growers, will have no stock for sale during the season of 1912-13. The two causes figuring strongly in bringing this about are the continued cold weather in the spring which caused strawberries to ripen late in Tennessee. By the time the heavy picking came the prices were very low. Consequently some growers became discouraged and did not continue cultivation. In West Tennessee many plant beds were drowned out by the memorable high water conditions prevailing there in the early spring. There is little doubt that this reduction in numbers of the plant growers will be permanent.

LEARN TO RECOGNIZE THE QUARANTINED INSECT PESTS AND PLANT DISEASES.

Realizing the importance of the home orchard and knowing that the average owner has little if any knowledge of either the kinds of trees to buy or how to care for them after they are set; I am led to give briefly a few statements which every person having a few trees and hoping to get fruit from them should know, as well as the prospective fruit grower.

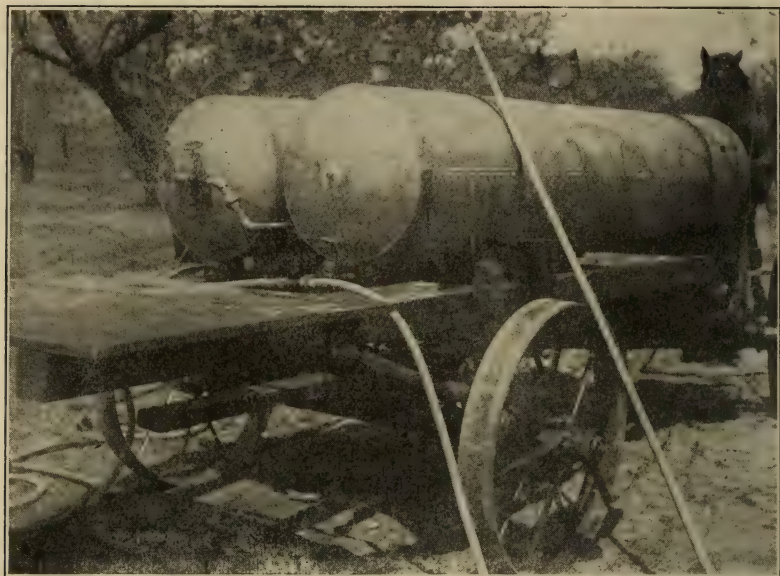
A letter from Union City, Tennessee, dated November 25, 1912, only echoes the tone of hundreds of letters coming to this Office each year. Persons should know of this man's troubles and also learn what to do should the same misfortune befall

them. The letter is as follows: "I wrote you sometime ago and sent you a twig off my apple trees which was infested with San Jose scale. Since I wrote you I have inquired around and find nearly all the trees sold by that nurseryman affected with scale. I would not have had them brought on my place for \$500.00 and want to get rid of them as quickly as possible. You will do me a favor to answer the above questions by private letter at once as I will not take any steps until I hear from you." The requested reply was sent promptly and besides giving the information the name of the nursery selling the trees was obtained. I am glad to report that the trees came from a nursery outside of Tennessee; and best of all from a nursery which today is out of business. To make a long story short I would say this is the future of all nurseries which try to evade the State Laws and deceive the buyer.

Before giving you the remedy for treating San Jose Scale let me lay emphasis upon the importance of prevention. Let's try to keep scale out of our orchards as long as we can. Do you know that the State Laws are trying to help you in this very matter? Just spend a few minutes to acquaint yourself with the requirements made on every nurseryman in Tennessee, and similar demands are made of nurserymen in all the States. No nurseryman or his salesman has any right to sell you a tree or shrub with San Jose scale upon it; furthermore you can demand a State inspection certificate on every order of nursery stock you buy.

Quoting the Law as given in Section 7 of Chapter 466 of the printed Acts of 1905 of Tennessee: "Any violation of said certificate by changing, defacing or placing it on uninspected or infested stock, or using the same after date of expiration or revocation shall render the owner or shipper liable to a fine of not less than one hundred (\$100.00) dollars nor more than one hundred and fifty (\$150.00) dollars for each offense."

Being acquainted with this aid the State is using to protect its fruit interests and knowing that the State Board of Entomology, Knoxville, Tennessee, is the place to write for information on any form of insect pest or plant disease attacking the products of the farm, forest and orchard. This Board will



Efficiency With Little Weight. A Compressed Air Sprayer.



A Suggestion for the Small Orchardist. If the Number of Your Trees do not Justify Buying a Barrel Sprayer, Two or More Persons Could Get One Together and Exchange Labor When Spraying.

also be glad to offer assistance by way of helping the people of Tennessee to keep from being defrauded. The information of any shortcomings in regard to the State requirements will be gladly received.

It is well to ward off the San Jose scale as long as you can, but when it does make its appearance in your orchard don't for a minute think you must take drastic steps and resort only to the axe or the cross cut saw. If the variety of fruit is desirable, prune well, cutting off the worst scale-affected limbs. Do this in December, January or February and follow the pruning with thorough spraying with the lime-sulphur solution. This may be made at home by boiling lime and sulphur together 40 minutes at the rate of 21 pounds of burnt lime and 18 pounds of sulphur to 3 or 4 gallons of water. Reduced, this amount gives 50 gallons of spray solution. The lime-sulphur solution may be purchased from a hardware, drug or general merchandise store. The standard brands have only to be reduced with water at the rate of 5 to 10 parts of water to 1 part of the concentrated lime-sulphur solution. Both of these sprays are caustic and must only be applied while the trees are dormant. The solution should be applied to the trees from top to bottom in the form of a fine, forcible mist, under about 200 pounds pressure. This condition can only be brought about by using a good sprayer. For this the writer recommends nothing smaller than a barrel sprayer. This form of sprayer is not expensive and when properly cared for will last for years. In many parts of the State where only a limited use is demanded a sprayer is purchased by several and used in a community.

The whole matter of spraying is simple, inexpensive and efficient. In fact it is impossible in this day to get perfect fruit without spraying. Make the resolution whether you have San Jose scale or not; spray thoroughly at the proper time and you will never have cause for regrets.

Lest you forget, be sure to demand trees, shrubs and vines free from insect pests and plant diseases, with an inspection certificate for the present year attached to each order and spray as a precautionary measure to prevent fruit blemishes as well as to cause fruit to hang on the tree longer and become larger and more luscious.



A Healthy Tree, Set as a Year Old



Apples Showing the Effect of Thorough and Timely Spraying

Lower Cut Loaned by the Deming Co., Salem, Ohio

NURSERIES IN THE THREE DIVISIONS OF THE STATE.

YEAR	EAST	MIDDLE	WEST	TOTAL
1905	61	106	27	194
1906	54	115	40	209
1907	62	118	49	229
1908	62	114	71	247
1909	69	115	67	251
1910	62	111	69	242
1911	149	120	96	365
1912	141	123	87	351

TENNESSEE NURSERYMEN FOR SEASON OF 1912-13.

(Number following name indicates rural delivery route.)

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
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BLOUNT COUNTY

MARYVILLE

C. B. Coleman.....	14.....	3.....	Strawberries
Chas. R. Coulter.....	5.....	1.....	Strawberries
Col. Cupp.....	6.....	4.....	Strawberries
T. L. Ennis.....	14.....	5.....	Strawberries
Sam Everitt	15.....	435.....	Strawberries
J. G. Teffeteller.....	1.....	7.....	Strawberries
Clyde T. West.....	3.....	8.....	Strawberries

BRADLEY COUNTY

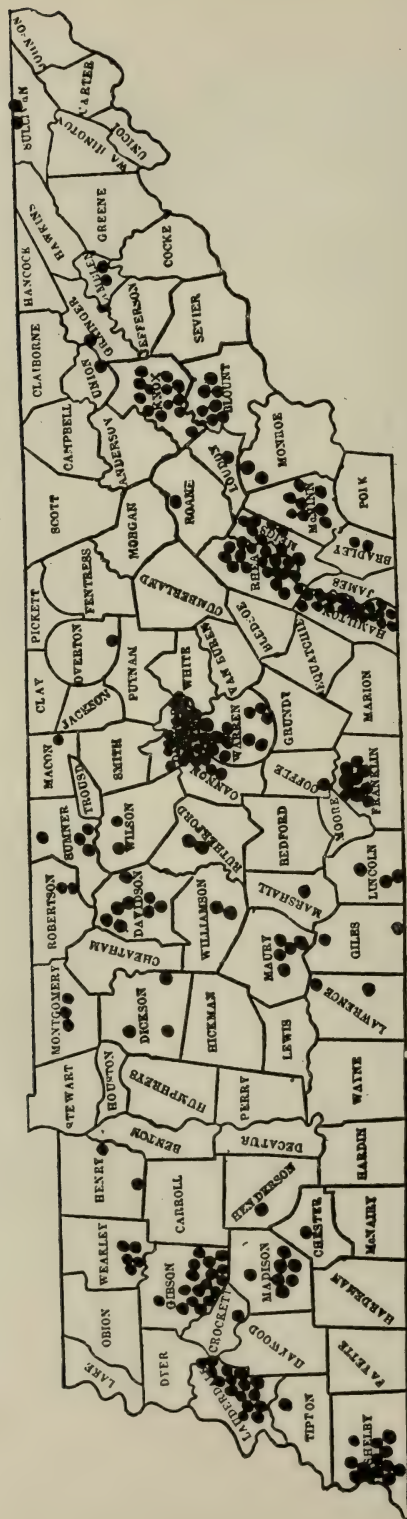
CLEVELAND

Easterly Nursery Co.,			
W. A. Easterly.....	30.....	11.....	Fruit and Ornamentals
Tennessee Nursery Co.,			
A. J. Fletcher.....	35.....	13.....	Fruit and Ornamentals

CANNON COUNTY

WOODBURY

Comer & Womack.....	1.....	15.....	Fruit
Mechanicsville Nurseries	1.....	14.....	Fruit
J. C. Melton, 2			



Black Spots Locate the 351 Nurseries in Tennessee in 1912.

Name and Address	No. Acres	Cert. No.	Stock Grown
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Mountain Spring Nur-
sery Co., 2

T. L. Clark

J. S. Denby 10..... 16..... Fruit

CARROLL COUNTY

McKENZIE

McKenzie Nursery Co.,

J. M. Null & Garrett. 5..... 17..... Fruit

CHESTER COUNTY

HENDERSON

F. M. O'Neal..... $\frac{1}{2}$ 20..... Fruit

COFFEE COUNTY

TULLAHOMA

Tullahoma Nursery Co.,

Wm. Brittain & Co... 10..... 21..... Fruit

CROCKETT COUNTY

BELLS

McDonald & Farrow

S. E. McDonald &

Farrow 20..... 420..... Strawberries

DAVIDSON COUNTY

BELLEVUE

W. J. Smith..... 1..... 29..... Fruit

HERMITAGE

P. M. Carver..... $\frac{1}{8}$ 28..... Fruit

JOELTON

F. E. Barnes, 3..... 10..... 434..... Strawberries

G. W. Carney & Sons, 3 4..... 424..... Strawberries

NASHVILLE

Belmont College Green-
houses, Susan L. Her-

ron 6,000 sq. ft.. 30..... Greenhouse

Geny Bros..... 105,000 sq. ft. 32..... Greenhouse

L. Haury & Son..... 75,000 sq. ft. 33..... Greenhouse

Hillcrest School Farm

Prof. Floyd Bralliar, 2 1..... 34..... Ornamentals

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
Joy Floral Co., Tom C. Joy	200,000 sq. ft.	35.....	Greenhouse
Lischey Nursery and Greenhouses	16,820 sq. ft.	36.....	Greenhouse
Joe Browne			Ornamentals
MacIntyre Bros.....	150,000 sq. ft.	37.....	Greenhouse
E. M. Patterson Sta. B. ½.....		38.....	Fruit and Ornamentals
Arnold Schmid.....	4,000 sq. ft.	39.....	Greenhouse
EAST NASHVILLE			
D. A. Tibbs, 3.....	5.....	137.....	Fruit and Strawberries
DEKALB COUNTY			
ROCK ISLAND			
Cornicopia Nursery Co., 2 Byers & F. J. Cantrell 2.....		50.....	Fruit
SMITHVILLE			
D. Arnold, 5.....	1½.....	373.....	Fruit
Bell & Conger Nursery Co., J. T. Bell E. A. Conger.....	25.....	40.....	Fruit
Big Four Nursery Co., Fain C. Potter.....	1½.....	41.....	Strawberries
L. O. Bing Nursery Co., L. O. Bing, 5.....	3.....	42.....	Fruit
Blue Spring Nursery Co., J. L. Smith & Son, 6.	10.....	43.....	Fruit
Bluhm Nursery Co., W. L. Gilbreath, 6..	4.....	44.....	Fruit
Cedar Grove Nursery J. M. Cantrell.....	6.....	46.....	Fruit
Center Grove Nursery Co., Robert L. Cantrell 5		8.....	47.....
Choice Fruit Nursery Co. E. O. Underhill, 6...	8.....	48.....	Fruit
Clear Spring Nursery, W. J. Griffith	7.....	49.....	Fruit
DeKalb Nursery Co., Estes & Hicks	3.....	370.....	Fruit

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
W. L. Ferrell, 1	$\frac{1}{4}$	374.....	Fruit
Hickory Valley Nursery Co., C. C. Bain & Sons, 1	$\frac{1}{4}$	472.....	Fruit
Flanders Nursery, W. H. Flanders, 1....	$\frac{1}{2}$	354.....	Fruit
Home Nursery Co., J. C. Cantrell	9.....	52.....	Fruit
Ideal Nursery & Orchard Co., W. R. Underwood, 5	5.....	53.....	Fruit
Jacobs Nursery Co., G. O. Jacobs	2.....	397.....	Fruit
Keltonburg Nursery, C. A. Cantrell	8.....	54.....	Fruit
Lassiter Nursery Co., Lassiter & Ferrell, 5.	10.....	55.....	Fruit
Lone Oak Nursery, J. A. Griffith, 1	5.....	56.....	Fruit
Model Home Nursery, R. M. Sanders	3.....	58.....	Fruit
Mount Hope Nursery, W. A. Moss & A. L. Allen, 1	15.....	59.....	Fruit
Mount Olive Nursery Co., W. C. Webb W. R. Tittsworth ...	7.....	60.....	Fruit
Mt. View Nursery, Vaughan Bros.	3.....	371.....	Fruit
New Fruit Nursery Co., W. H. Davis & Sons, 5	67.....	63.....	Fruit
New Standard Nursery Co., Herman Sanders & Bro.	25.....	375.....	Fruit
Oak Hill Nursery Co., W. H. Davis & I. T. DeLong, 2	6.....	64.....	Fruit
People's Nursery Co., John Van Hooser Flanders & Cantrell .	$1\frac{1}{2}$	65.....	Fruit

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
Pine Creek Nursery Co., J. E. Tittsworth	9	379	Fruit
Prosperity Nursery Co., Redman Bros., 2	4	66	Fruit
Pure Fountain Nursery Co., F. P. Sanders, 1. 20		67	Fruit
Seven Springs Nursery Co., R. G. Cantrell & Sons	3	68	Fruit
Sink Creek Nursery Co., A. C. Allen & Co., 5. 5		69	Fruit
Smithville Nursery Co., 2 65		70	Fruit
James Webb J. C. Moore P. G. Hicks R. L. Cantrell			
Mrs. J. P. Tittsworth, 1 $\frac{1}{16}$		473	Raspberries
W. A. Tramel, 5	$\frac{1}{4}$	433	Small Fruits
Union Nursery Co., W. H. Bing & Co., 5. 23		73	Fruit
Washer & Stewart Charles Stewart I. W. Washer	8	51	Fruit
Wharton's Spring Nur- sery, Spencer Bing, 1 25		74	Fruit
Young Brothers	8	75	Fruit
Chas. Young J. W. Young Sam Young			

DICKSON COUNTY

DICKSON

Mrs. M. E. Curry	2,000 sq. ft.	76	Greenhouse
J. A. Higdon Nurseries. $\frac{1}{2}$		77	Fruit
J. A. Higdon n			

SYLVIA

Barton's Creek Nurseries, A. J. Byrn D. A. Nesbitt	8	79	Fruit and Strawberries
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Name and Address	No. Acres	Cert. No.	Stock Grown
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WHITE BLUFFS

Pleasant Ridge Nursery

Jno. L. Foriest 1..... 80.....Fruit

FRANKLIN COUNTY

DECHERD

Glenclyff Nursery

J. M. Miller & Son .. 14..... 81.....Fruit

Lone Oak Vineyard

Will F. Halladay ... 1..... 82.....Grapes

WINCHESTER

Cedar Hill Nursery Co.,

J. W. Shadow100..... 83.....Fruit and
Ornamentals

Commercial Nursery Co.,

2, Harry Nicholson &

Co. 25..... 84.....Fruit and
Ornamentals

Cumberland Nurseries

E. B. Drake 25..... 85.....Fruit

Fairview Nursery Co.,

D. A. Duncan 2..... 86.....Fruit and
Strawberries

J. C. Hale Nursery Co.,

J. C. Hale 10..... 87.....Fruit and
Ornamentals

Lily Grove Nursery Co.,

A. C. Trig 1..... 88.....Fruit

Joe Shadow Nursery Co.,

Joe Shadow 3..... 90.....Fruit

Southern Nursery Co.,

E. W. Chattin & Co..600..... 91.....Fruit and
Ornamentals

Harvey M. Templeton. 20:.....466.....Fruit

Tenn. Wholesale Nurse-

ries, E. W. Chattin &

Co. 50..... 92.....Fruit

GIBSON COUNTY

GIBSON

B. C. Warmath 10..... 99.....Strawberries

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
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HUMBOLDT

T. F. Campbell, 1	5	419	Strawberries
Isham Clement	3	101	Strawberries
J. H. Estes	7	389	Strawberries
T. E. Graves, 6	12	387	Strawberries
M. F. Hamilton, 5	14	107	Strawberries
M. J. Hamilton, 1	7	108	Strawberries
Ben Hazelwood	4	110	Strawberries
Mrs. Ben Hazelwood	500 sq. ft.	111	Greenhouse
H. H. Love, 5	20	113	Strawberries
R. J. W. Matthews	18	114	Strawberries
Robert Medlin	5	116	Strawberries
T. N. Nelson	6	117	Strawberries
R. A. Patterson	15	388	Strawberries
Chester Penn	5	118	Strawberries
J. F. Raines	10	395	Strawberries
W. Z. Raines & Son	80	119	Strawberries
Mrs. J. F. Russell	1,000 sq. ft.	120	Greenhouse
Mrs. J. B. Stallings, 1	6	392	Strawberries
Luther Stallings	15	396	Strawberries
W. F. Stallings	30	391	Strawberries
Sunny South Nursery Co., Bob Fizer	20	124	Fruit
Tennessee Nursery Co., W. W. Baird	28	125	Fruit
J. G. Warmath	12	390	Strawberries

MEDINA

Wilson Graves	5	129	Strawberries
E. A. Rowlett	15	132	Strawberries

RUTHERFORD

Rutherford Nursery Co., Chas. Pennington	4	133	Fruit
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GILES COUNTY**LYNNVILLE**

Lynnville Nurseries M. L. Spivey	2	134	Fruit
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Name and Address	No. Acres	Cert. No.	Stock Grown
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PROSPECT STATION

Woodlawn Nursery

R. A. Eubank	1	135	Fruit
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GRAINGER COUNTY

WASHBURN

Oak Hill Nursery

A. L. Hopson	2½	136	Fruit
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HAMBLEN COUNTY

MORRISTOWN

Hobson Nursery Co.,

D. M. Hobson	½	139	Fruit
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Morristown Nursery

J. C. Brown & Nicholson	¼	140	Grapes
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HAMILTON COUNTY

CHATTANOOGA

Chattanooga Nurseries

D. W. Hunter	100	141	Fruit and Strawberries
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John Karsten	20,000 sq. ft.	142	Greenhouse
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John Sanders, Sta. A...	5	143	Strawberries
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EAST CHATTANOOGA

John Lightfoot	10	144	Strawberries
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NORTH CHATTANOOGA

W. F. Haeger	20,000 sq. ft.	146	Greenhouse
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HIXSON

Ashley Bros.	5	147	Strawberries
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L. C. Clayton	4	426	Strawberries
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Jno. E. Folkner	15	149	Strawberries
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J. A. Gilmore	4	427	Strawberries
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Will Kirklen	5	151	Strawberries
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Kirklen & Clayton	5	152	Strawberries
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U. S. Messick	4	153	Strawberries
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E. E. Swingle	5	154	Strawberries
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MISSIONARY RIDGE

Mrs. J. W. Crouch	20,000 sq. ft.	155	Greenhouse
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<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
RETRO			
Kelley & Dooley	3.....	159.....	Strawberries
C. A. List	100.....	160.....	Strawberries
G. W. May & Son, 2.....	100.....	432.....	Strawberries
P. R. Robison	1.....	161.....	Strawberries
St. ELMO			
Mrs. Marietta Hunt..	2,000 sq. ft..	162.....	Greenhouse
SALE CREEK			
Will List.....	100.....	163.....	Strawberries
SODDY			
T. J. Alexander, 1.....	3.....	156.....	Strawberries
R. E. Coleman.....	14.....	428.....	Strawberries
Crawley Bros., 1			
J. M. Crawley & Bro..	8.....	429.....	Strawberries
John Gibson, 1.....	5.....	430.....	Strawberries
A. Horn, 3.....	120.....	169.....	Strawberries
C. C. Hutcheson, 1.....	50.....	170.....	Strawberries
J. W. Lee & Son, 1.....	25.....	171.....	Strawberries
B. H. May, 1.....	7.....	431.....	Strawberries
D. Trantham, 1.....	8.....	174.....	Strawberries
D. L. Varner, 1.....	10.....	175.....	Strawberries
Jno. A. Varner, 1.....	5.....	176.....	Strawberries
HENDERSON COUNTY			
LEXINGTON			
J. A. Young, 1.....	1.....	180.....	Fruit
HENRY COUNTY			
MANSFIELD			
Mansfield Nursery Co.,			
Hastings Bros.....	2.....	181.....	Fruit
SPRINGVILLE			
H. A. Fitch.....	5.....	386.....	Strawberries
KNOX COUNTY			
BEARDEN			
Ollie Bean.....	1.....	184.....	Blackberries
A. J. Nelson.....	4.....	185.....	Strawberries

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
Rosecliff Nursery C. J. McClung III...	50.....	186.....	Ornamentals and Shade
C. W. Wise, 2.....	3.....	187.....	Strawberries
CONCORD			
Empire Nursery Co., D. C. Hodge A. J. Deal.....	4.....	188.....	Fruit
FOUNTAIN CITY			
Chas. Baum.....	120,000 sq. ft...	189.....	Greenhouse
Fountain City Fruit Farm, Sam Cooper..	8.....	190.....	Strawberries
O. H. Tindell Nursery Co., O. H. Tindell...	1.....	191.....	Fruit and Ornamentals
HEISKELL			
Lone Oak Nursery Co., A. J. McClain.....	6.....	192.....	Fruit
KNOXVILLE			
G. W. Callahan.....	4,000 sq. ft...	193.....	Greenhouse
C. W. Crouch.....	150,000 sq. ft...	194.....	Greenhouse
Custer Greenhouses.....	700 sq. ft...	474.....	Greenhouse
A. H. Dailey.....	60,000 sq. ft...	195.....	Greenhouse
East Tenn. & Miss. Orchard Co., C. O. Fowler	$\frac{1}{2}$	196.....	Fruit
C. M. Emory.....	10,000 sq. ft...	197.....	Greenhouse
Howell Nurseries, Bruce Howell	8.....	199.....	Ornamentals
J. R. H. Hilton.....	6.....	198.....	Strawberries
Wm. A. Jenkins.....	1.....	200.....	Grapes
M. W. Kirby, 2.....	30.....	201.....	Strawberries
Knoxville Nursery Co., N. W. Hale & Co....	150.....	202.....	Fruit and Ornamentals
Marble City Nursery Co., A. A. Newson.....	42.....	203.....	Fruit and Ornamentals
Benjamin Maynard.....	$\frac{1}{4}$	204.....	Violets

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
A. J. McNutt.....	2,000 sq. ft.	205.....	Violets
William Pope.....	$\frac{1}{8}$	206.....	Privet
PICKEL			
Thos. C. Schnicke.....	$\frac{1}{4}$	207.....	Fruit
POWELLS STATION			
James N. Hendrix....	2.....	208.....	Strawberries
Home Nursery Co., S. Dougherty.....	10.....	210.....	Fruit
W. J. McElroy.....	$\frac{1}{16}$	211.....	Fruit
Standard Nursery Co., R. C. Bell & Co.....	2.....	212.....	Fruit
LAUDERDALE COUNTY			
CURVE			
W. F. Carmack.....	20.....	409.....	Strawberries
E. J. Coffman, 1.....	10.....	408.....	Strawberries
W. H. Coffman, 1.....	10.....	405.....	Strawberries
A. B. Ford.....	15.....	406.....	Strawberries
S. J. Garrett.....	5.....	410.....	Strawberries
S. D. Smith.....	4.....	407.....	Strawberries
Julian Sutton, 1.....	8.....	227.....	Strawberries
GATES			
N. H. Braden.....	7.....	417.....	Strawberries
J. A. Bradford, 2.....	20.....	215.....	Strawberries
D. B. Lawrence.....	5.....	411.....	Strawberries
Lee Bros., T. A. Lee & Bro.	12.....	414.....	Strawberries
Lewis Nelson, 2.....	10.....	404.....	Strawberries
S. G. Shilcut, 2.....	5.....	403.....	Strawberries
J. R. Simmons, 2.....	20.....	413.....	Strawberries
W. E. Williams, 1.....	10.....	418.....	Strawberries
HALLS			
K. H. Griffin, 2.....	5.....	412.....	Strawberries
Mrs. R. H. Pitts.....	15.....	416.....	Strawberries
J. G. Young.....	10.....	415.....	Strawberries
RIPLEY			
A. C. Carter, 2.....	4.....	399.....	Strawberries

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
J. B. Cheek, 4.....	15.....	402.....	Strawberries
C. O. Conner.....	8.....	221.....	Strawberries
J. C. Durham & Son..	20.....	222.....	Strawberries
T. J. Green, 2.....	10.....	401.....	Strawberries
Mrs. P. H. Pugh.....	500 sq. ft..	226.....	Greenhouse
R. J. Sutton, 2.....	10.....	400.....	Strawberries
W. B. Sutton, 2.....	20.....	228.....	Strawberries
Clarence B. Thomp- son, 4.....	12.....	229.....	Strawberries
J. W. Travis, 2.....	15.....	230.....	Strawberries
W. L. Travis, 2.....	10.....	398.....	Strawberries
E. R. Underwood.....	5.....	232.....	Strawberries

LAWRENCE COUNTY

FALL RIVER

Fall River Nursery

Mrs. L. H. Garretson. $\frac{1}{8}$235.....Fruit

SUMMERTOWN

Summertown Nursery

J. H. Green 3.....234.....Fruit

LINCOLN COUNTY

BLANCHE

Blanche Nursery Co.,

Flanagan & Son.... 11.....236.....Fruit

FAYETTEVILLE

C. W. Webb.....8,000 sq. ft...237.....Greenhouse

TAFT

Coldwater Nursery Co.,

W. W. Twitty & Sons 20.....238.....Fruit

LOUDON COUNTY

LOUDON

A. W. Ward..... 3.....239.....Fruit

MACON COUNTY

RED BOILING SPRINGS

T. J. Wooten..... 2.....240.....Fruit

Name and Address *No. Acres* *Cert. No.* *Stock Grown*

McMINN COUNTY

ATHENS

B. F. Cates.....	8.....	242.....	Strawberries
Jno. Hanks	8.....	243.....	Strawberries
Owen Harrison.....	1.....	468.....	Strawberries
Hicks Bros., James Hicks & Bro., 7.....	5.....	469.....	Strawberries
Oscar Hutsell	3.....	244.....	Strawberries
G. F. Lockmiller.....	4.....	245.....	Strawberries
J. P. Minge.....	10.....	246.....	Strawberries
Fred P. Taylor.....	2.....	467.....	Strawberries
C. R. Wilkins.....	2.....	248.....	Strawberries

MADISON COUNTY

JACKSON

James & Nelson Floral Co.,	10,000 sq. ft.	393.....	Greenhouse
E. L. James			
J. L. Nelson			
Murray Sands			
Miss M. E. McCowatt	1,000 sq. ft.	251.....	Greenhouse
G. H. McNeil.....	1,000 sq. ft.	252.....	Greenhouse
T. L. Metcalf.....	4,000 sq. ft.	253.....	Greenhouse
W. D. Smith, 7.....	1½.....	254.....	Fruit
Miss Lora Spah	100 sq. ft.	255.....	Greenhouse
M. W. Taylor, 1001 E. Chester St.....	¼.....	394.....	Privet

MARSHALL COUNTY

LEWISBURG

Mrs. R. H. Hayes.....	300 sq. ft.	258.....	Greenhouse
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MURY COUNTY

COLUMBIA

Claude M. Erwin.....	¼.....	259.....	Small Fruits
Geo. C. McFall.....	8.....	380.....	Strawberries
Oakland Nurseries, W. Y. C. Grant	18.....	260.....	Fruit and Ornamentals

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
T. W. Sowell, 5.....	1 $\frac{3}{4}$	261.....	Grapes and Strawberries
Jno. W. Thompson.....	8,000 sq. ft..	262.....	Greenhouse Strawberries

MEIGS COUNTY

BREEDENTON

S. S. Eaves.....	25.....	264.....	Strawberries
Howard Bros.....	10.....	265.....	Strawberries
F. M. McKenzie & Son	8.....	266.....	Strawberries

PINHOOK

W. E. Arnwine, 3.....	4.....	458.....	Strawberries
J. W. Powers, 3.....	8.....	269.....	Strawberries
W. E. Pullen, 3.....	12.....	270.....	Strawberries

MONROE COUNTY

SWEETWATER

J. K. Cate, 3.....	1.....	470.....	Strawberries
J. P. Richeson, 3.....	15.....	271.....	Strawberries

MONTGOMERY COUNTY

CLARKSVILLE

Central Greenhouse			
T. L. Metcalf.....	2,000 sq. ft..	272.....	Greenhouse
Evergreen Lodge Green- house, James Morton	15,000 sq. ft	273.....	Greenhouse
M. E. Hiatt.....	8,000 sq. ft.	274.....	Greenhouse

OVERTON COUNTY

MONTEREY

Rock Spring Nursery			
P. A. Copeland, 2.....	$\frac{1}{8}$	454.....	Fruit

RHEA COUNTY

CARP

J. H. Pugh.....	15.....	276.....	Strawberries
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DAYTON

J. C. Carney & Son, 1..	18.....	278.....	Strawberries
J. T. Carney, 1.....	10.....	441.....	Strawberries
S. F. Conner, 4.....	15.....	442.....	Strawberries
G. S. Cooley.....	20.....	279.....	Strawberries

<i>Name and Address</i>	<i>No.</i>	<i>Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
John Doss, 2.....	12.....	465.....	Strawberries	
S. W. Gill.....	30.....	282.....	Strawberries	
Ed. Henderson, 5.....	6.....	455.....	Strawberries	
J. H. Jackson, 1.....	12.....	438.....	Strawberries	
R. J. Jones, 4.....	5.....	443.....	Strawberries	
S. A. Lewis, 2.....	7.....	462.....	Strawberries	
S. W. McDonald, 2....	50.....	463.....	Strawberries	
Chas. Owensby, 4.....	2.....	452.....	Strawberries	
J. W. Purser, 5.....	10.....	459.....	Strawberries	
T. F. Robinson, 1.....	10.....	440.....	Strawberries	
C. T. Rudd, 4.....	10.....	444.....	Strawberries	
J. Mart Smith, 4.....	3.....	449.....	Strawberries	
J. J. Tallent.....	10.....	460.....	Strawberries	
Chas. Turner, 2.....	5.....	464.....	Strawberries	
Tom Wilkey, 4.....	10.....	286.....	Strawberries	
Sam Wright, 1.....	3.....	439.....	Strawberries	

EVANSVILLE

J. G. Ballard.....	5.....	287.....	Strawberries
J. M. Ballard.....	15.....	288.....	Strawberries
J. M. Bramlett.....	4.....	292.....	Strawberries
M. C. Bramlett.....	20.....	293.....	Strawberries
J. D. Chambers, 1.....	4.....	447.....	Strawberries
Noel Cunyngham.....	100.....	450.....	Strawberries
W. P. Darwin.....	15.....	295.....	Strawberries
W. M. Day & Sons, 1..	25.....	457.....	Strawberries
O. G. Gannaway.....	5.....	298.....	Strawberries
Jacob Guth, 1.....	8.....	448.....	Strawberries
W. S. Haggard.....	30.....	445.....	Strawberries
Jno. R. Hall.....	20.....	300.....	Strawberries
J. N. Kennedy.....	10.....	301.....	Strawberries
J. A. Mathis.....	10.....	303.....	Strawberries
J. H. Neal, 1.....	2.....	307.....	Strawberries
Byron Pelfry, 1.....	3.....	451.....	Strawberries
W. P. Thomison & Son.	50.....	314.....	Strawberries
C. O. Vaughan, 1.....	20.....	315.....	Strawberries
John Vaughan & Mc- Fall, 1.....	6.....	316.....	Strawberries

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
W. A. Vaughan, 1.....	2.....	446.....	Strawberries
E. F. Waterhouse.....	15.....	317.....	Strawberries
J. S. Wilkey.....	30.....	321.....	Strawberries
J. H. Womack.....	10.....	323.....	Strawberries
GRAYSVILLE			
James W. Cozart.....	$\frac{1}{8}$	461.....	Grapes and Strawberries
RHEA SPRINGS			
R. F. Porter, 2.....	25.....	456.....	Strawberries
ROANE COUNTY			
HARRIMAN			
W. W. Wallace.....	5.....	324.....	Scions
ROBERTSON COUNTY			
GREENBRIER			
Greenbrier Nursery Co.,			
R. R. Harris.....	35.....	325.....	Fruit and Ornamentals
Harris Nursery,			
R. R. Harris	10.....	326.....	Fruit
RUTHERFORD COUNTY			
MURFREESBORO			
Rutherford Fruit and Nursery Co., C. R.			
Given	3.....	327.....	Fruit
Stone's River Nursery..	20.....	328.....	Fruit
Dr. W. C. Bilbro			
C. W. Allen			
SEVIER COUNTY			
GATLINBURG			
H. B. Kear & Stephen			
Whaley	$\frac{1}{2}$	330.....	Fruit
SHELBY COUNTY			
ELLENDALE			
W. T. Field.....	$\frac{1}{16}$	425.....	Strawberries Blackberries

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
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BUNTYN

R. B. Koen & Son	3	331	Fruit and Ornamentals
G. W. Smith & Son, 4 . .	5	332	Shade and Ornamentals

MEMPHIS

Chas. Adams, 1200 Union Ave.	$\frac{1}{8}$	333	Ornamentals
Hernando Floral Co., . .	8,000 sq. ft.	475	Hardy plants and Shrubs
Mrs. A. Benham O. S. Benham			

Idlewild Greenhouses . .	10,000 sq. ft.	335	Greenhouse
T. G. Owen W. H. Englehart			
Johnson's Greenhouses .	35,000 sq. ft.	336	Greenhouse
O. Johnson W. C. Johnson			
Evan McKenzie, 20 . . .	5,000 sq. ft.	337	Greenhouse
Diana Street			
Memphis Floral Co., . .	100,000 sq. ft.	338	Greenhouse Ornamentals
C. H. Hume			
Memphis Nursery	8	329	Fruit and Ornamentals
J. H. Boyd			

Pearson-McCarty Co. . . .	8,000 sq. ft.	340	Greenhouse
Stranahan Greenhouses	3,000 sq. ft.	334	Greenhouse

SULLIVAN COUNTY

BRISTOL

Bristol Floral Co., H. G. Bramme	32,000 sq. ft.	342	Greenhouse
Globe Nurseries	175	343	Fruit
W. M. Wood G. E. Nickels			

SUMNER COUNTY

GALLATIN

J. W. Hill	8	344	Strawberries
R. D. McClain	1 $\frac{1}{2}$	345	Strawberries

<i>Name and Address</i>	<i>No. Acres</i>	<i>Cert. No.</i>	<i>Stock Grown</i>
Chester Perce.....	14.....	346.....	Strawberries

PORTLAND

Donoho Bros.	16.....	347.....	Fruit and
J. M. Donoho			Strawberries.
J. S. Donoho			

TIPTON COUNTY

COVINGTON

Mrs. R. S. Baird	100 sq. ft...	348.....	Greenhouse
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UNION COUNTY

LUTTRELL

Union County Nursery			
A. M. Hill.....	4½.....	453.....	Strawberries.

WARREN COUNTY

EARLEYVILLE

N. L. Brown.....	½.....	376.....	Fruit
W. C. Holt.....	1.....	383.....	Fruit
New Home Nursery, 2..	1.....	349.....	Fruit
J. H. Wright			
Short Mountain Nursery			
Purser & Davis, 2....	2.....	350.....	Fruit

DIBRELL

J. C. Bond	1.....	377.....	Fruit
R. H. Bond	1.....	381.....	Fruit
F. B. Warren	3.....	382.....	Fruit

IRVING COLLEGE

Ornamental Nurseries			
Taylor Perry, Jr.	5.....	352.....	Forest
			Seedlings.
I. J. Perry	5.....	372.....	Forest
			Seedlings.
N. N. Smith	5.....	353.....	Forest
			Seedlings.

McMINNVILLE

Dibrell Nursery			
I. H. Griffith, 4.....	5.....	351.....	Fruit

Name and Address	No. Acres	Cert. No.	Stock Grown
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Forest Nursery & Seed			
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Co., J. H. H. Boyd, 2	40	355	Forest Seedlings
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Highland Nursery Co.,			
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J. B. Loring & Son, 4	10	357	Fruit
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Home Nursery			
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Solomon Craven, 3	$\frac{1}{2}$	358	Fruit
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Mountain Creek Nur-			
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ery Co.,	8	359	Fruit
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G. R. Newby			
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C. R. Lowry			
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Pleasant Valley Nursery			
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S. D. Elrod & Son, 4	$\frac{1}{2}$	360	Fruit
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Williams & Son	2	362	Fruit
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SMARTT			
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Peter Craven & Son	3	363	Fruit
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WEAKLEY COUNTY

GREENFIELD

H. J. Climer	10	423	Strawberries
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N. J. Corum	10	437	Strawberries
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Curren Patterson	9	471	Blackberries
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J. H. Swinney	$3\frac{1}{2}$	421	Strawberries
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J. W. Swinney & Sons	8	422	Strawberries
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WILLIAMSON COUNTY

FRANKLIN

Franklin Nursery &			
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Greenhouse Co.,			
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Edward Truett	2,000 sq. ft.	366	Greenhouse
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James E. Scobey	1	365	Strawberries
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WILSON COUNTY

LEBANON

Lebanon Floral Co.,			
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W. H. Anderson &			
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Son	10,000 sq. ft.	367	Greenhouse
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MARTHA

Wilson County Nursery			
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Green Bros., 2	14	368	Fruit
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A LETTER TO THE NURSERY SALESMEN DOING BUSINESS IN TENNESSEE.

DEAR SIR:

Under separate cover I am sending to you copies of our last Bulletins, Six and Seven. As a salesman you will find both of these publications of interest and of value to your nursery business.

In the past considerable trouble has resulted from salesmen not being informed in regard to the rules and regulations relative to the sale of nursery stock, and not being acquainted with the work of this Department. As an innovation this year, we have asked each of the nurserymen in the State to give us the names and addresses of their salesman; this they have willingly done. It is our purpose to send you from time to time Bulletins which are issued regularly from this Office and to keep you more in touch with our work. We wish to be friendly with you and to do all in our power to assist you in the great work which you are doing; a more honorable pursuit, if properly conducted, I do not know. We want to co-operate with you and in return have your co-operation. By this means more effective work can be done by this Office and I am sure your business will be extended and elevated.

At any time we can assist you by way of answering questions, determining insect pests or plant diseases or help you in the naming of fruits it will be a pleasure to do so. From the back of the enclosed card you will note the scope of our work; it comprises a great many lines, all of which are being appreciated by the people of Tennessee, and for the past eight years noticeable advancement has been made along the line of combating insect pests and plant diseases. We invite you to take advantage of our work and use us whenever you can.

On January 29, 30 and 31st, there will be held in Nashville a three days meeting of the fruit growers and nurserymen of the State. These meetings have been held for the past eight years and have proven very pleasant and profitable gatherings. We hope that you will plan to be with us this year. With the large exhibits of fruit and the nurserymen, salesmen and fruit growers

of this and adjoining states, and the excellent program, a very beneficial meeting is assured.

I ask you to carefully read the bulletins above referred to and if there are any parts that you do not fully understand, ask for an explanation.

Thanking you in advance for your co-operation, I remain,

Sincerely yours,

State Entomologist and Plant Pathologist.

ORGANIZATIONS.

The State Nurserymen's Association started in 1905 for the purpose of acquainting the orchardists with the nurserymen, as well as to establish higher standards in business relations and to bring before its members the latest and most approved methods pertaining to their interests. This organization now has an active membership of 135 people in the State, besides many honorary members from eight other Southern States.

In the Southern Nurserymen's Association there are 12 members from Tennessee and in the National Nurserymen's Association, 15.

There is no better way to keep up with the ever-advancing horticultural science than by being a member of some live horticultural organization. If you are not a member, join at once, especially your State organization, from which you will get the greatest amount of benefit in dealing with Tennessee's conditions. Send the Secretary your name. A program of the coming Convention follows:

PROGRAM

EIGHTH ANNUAL CONVENTION

STATE HORTICULTURAL SOCIETY

STATE NURSERYMEN'S ASSOCIATION

SECOND ANNUAL CONVENTION

STATE BEEKEEPERS' ASSOCIATION

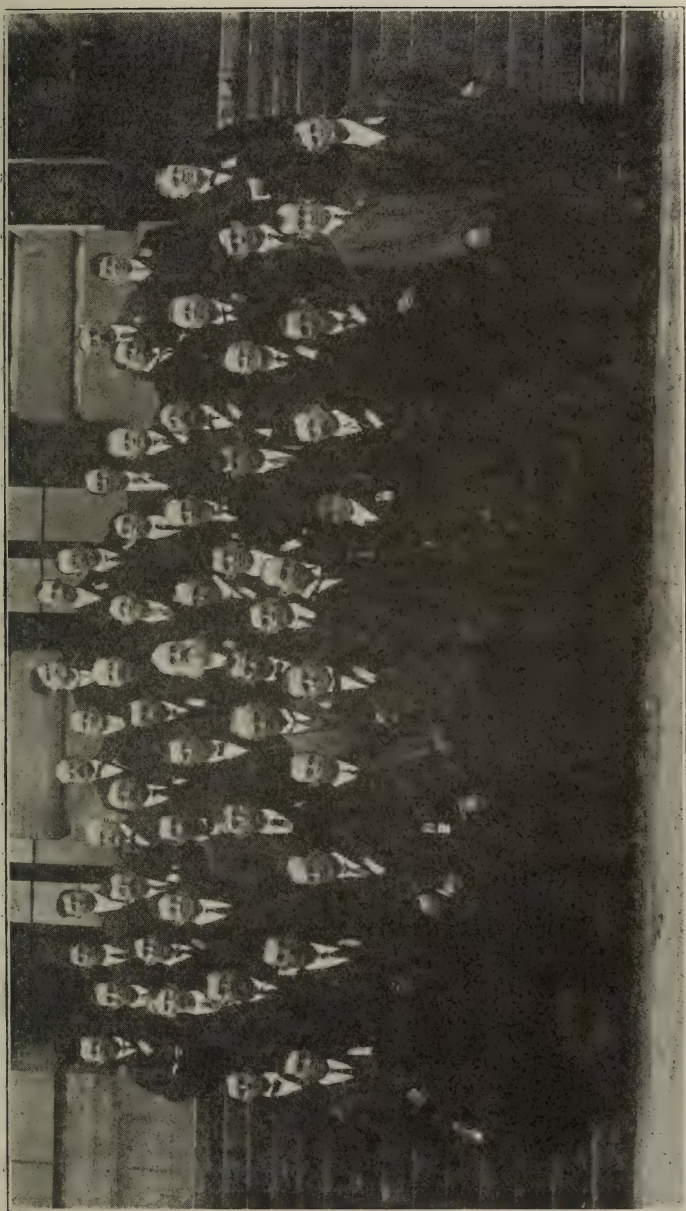
NASHVILLE, TENN.

January 29th, 30th and 31st, 1913.

SPECIAL ANNOUNCEMENTS.

HEADQUARTERS.

The Headquarters chosen for the Convention this year will be at the MAXWELL HOUSE, corner of Church Street and Fourth Avenue. The meetings will be held in the Assembly Room of this Hotel. Special



Tennessee Nurserymen's Association Annual Convention, Nashville, 1912

rates for those attending the Convention are offered by the management and all are encouraged to secure rooms in advance. The regular rates are \$1.00 to \$3.50, European plan.

REDUCED RAILROAD RATES.

The Masonic Grand Lodge will be in session during the week, for which occasion the railroads of the State give a special round trip rate to Nashville. All persons attending the meetings of Fruit Growers, Nurserymen and Beekeepers are entitled to reduced railroad rates.

FRUIT EXHIBITS.

The Fruit Growers, Nurserymen and Beekeepers are encouraged to bring fruit, nursery stock and products from the apiary for exhibition purposes.

ADDRESSES.

Everyone on the program is urged to prepare a paper, so that a full report of the meetings may be kept by the secretaries.

MEMBERSHIP.

Efforts are being made to increase the membership to 200. All persons interested are cordially invited to attend the meetings and take part in discussions. Membership dues are \$1.00 a year.

THE STATE HORTICULTURAL SOCIETY

PROGRAM

JANUARY 29, 1913.

10 A. M.

Address of Welcome.....Hon. T. F. Peck, Commissioner of Agriculture
Response, with President's address.....J. C. Pruett, Union City

Report of Secretary-Treasurer.....C. A. Keffer, Knoxville

Appointment of Committees

The Place of Fruit and Truck Crops

in General Farming.....W. G. Wilkinson, Cornersville

Cover Crops and Fertilizers for Orchards... { L. R. Neel, Nashville
Percy Brown, Spring Hill

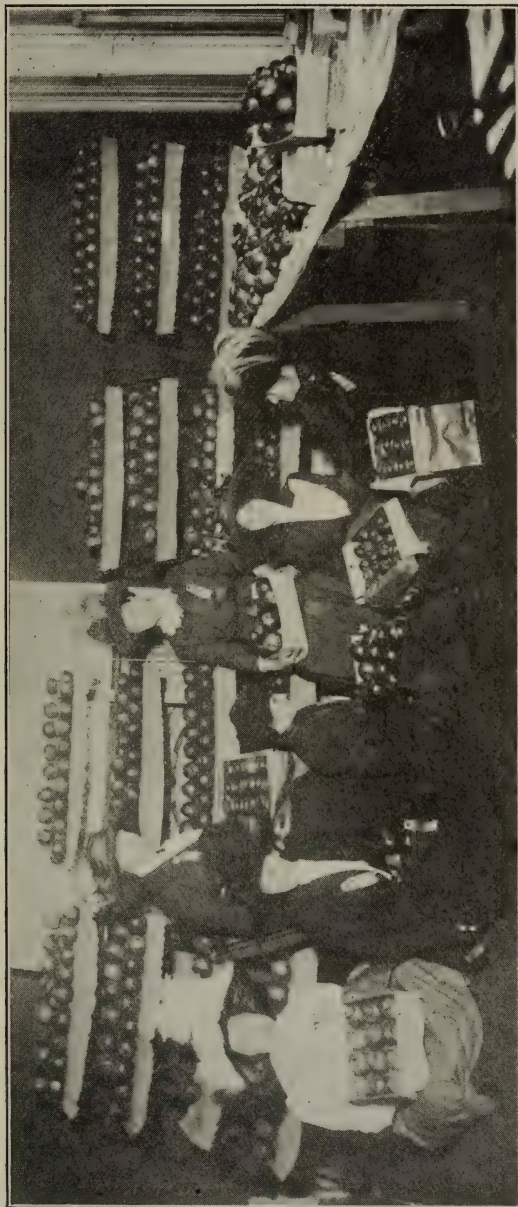
Relation of Horticulture to Bee Keeping.....Dr. J. S. Ward,
State Apiary Inspector, Nashville

A Peach Fete.....J. L. Jones, Columbia

1:30 P. M.

The Peach Crop of 1912; Management of the { S. N. Varnell, Cleveland
Orchard and Marketing the Crops..... { W. P. Wade, Kenton
J. S. Smalling, Watauga
A. J. Crowder, Kingston
J. C. Carr, New Tazewell

Commercial Apple Crop of 1912; Manage- { Jas. Donaho, Portland
ment of the Orchard and Marketing { I. C. Murphy, Columbia
the Crop { H. C. Scruggs, Nashville
J. C. Blackburn, Santa Fe
J. D. Ellis, Dayton



Comparing Tennessee With Western Fruit at Convention of Fruit Growers and Nurserymen, Nashville, 1912.

The Small Fruits in 1912; Management and Marketing the Crop { Robt Morris, Ridge Top
T. D. Reed, Goodlettsville
Mac Landess, Fayetteville

8 P. M.

Economical Soil Building.....Prof. H. A. Morgan
Director Experiment Station, Knoxville

STATE NURSERYMEN'S ASSOCIATION

PROGRAM

THURSDAY, JANUARY 30, 1913.

MORNING SESSION, 9:30 O'CLOCK.

Call to Order.

Invocation.....Dr. James I. Vance, Nashville

Address of Welcome.....C. C. Gilbert, Nashville

Report of Secretary-Treasurer.....G. M. Bentley, Knoxville

Appointment of Committees..... { Nominations
Resolutions
Auditing

Details Nurserymen Should Watch..... { A. I. Smith, Knoxville
Henry Chase, Huntsville, Ala.

How I Have Met the Labor Problem..... { J. R. H. Hilton, Knoxville
R. R. Harris, Greenbrier
Tom C. Joy, Nashville

Something About Roses.....Sam. Crowell, Roseacres, Miss.

A Few Words.....Rutledge Smith, Cookeville

AFTERNOON SESSION, 2:00 O'CLOCK.

Report of Committees.

Election of Officers.

What Nurserymen Can and Should Do to Encourage More Beautiful Homes.....Floyd Bralliar, Nashville

Why Tennessee Grown Trees Are Sought..Chas. Pennington, Rutherford

Modern Horticulture in Argentine Republic...L. C. Stark, Louisiana, Mo.

Co-operation Between the Railroads and the Nurserymen..T. O. Plunkett

Mgr. Dept. of Farm Investigation Work—Southern R. R., Atlanta, Ga.

The Relation of Climate to the Growing of Elberta Peach..J. F. Voorhees

Local Forecaster U. S. Weather Bureau, Knoxville

EVENING SESSION, 7:30 O'CLOCK.

Trees Which I want in My Orchard.....Henry R. Howard
Mgr. Howard Orchard Co., Chattanooga

The Importance of Small Retail Orders.....Discussed by Members

My Experience with Dynamite in Nursery and Orchard Practice.....

.....W. H. Stark, Stark City, Mo.

President's Annual AddressE. W. Chatten, Winchester

OFFICERS OF THE
STATE HORTICULTURAL SOCIETY.

PRESIDENT

J. C. PRUETT Union City

VICE-PRESIDENT

ROBERT MORRIS Ridgetop

SECRETARY-TREASURER

C. A. KEFFER State University, Knoxville

SECTIONAL VICE-PRESIDENTS

EAST TENNESSEE—W. M. Wood Bristol

MIDDLE TENNESSEE—Prof. John Daniels Nashville

WEST TENNESSEE—W. H. Rochelle Jackson

OFFICERS OF THE

STATE NURSERYMEN'S ASSOCIATION.

PRESIDENT

E. W. CHATTIN Winchester

VICE-PRESIDENT

Henry R. Howard Chattanooga

SECRETARY-TREASURER

G. M. BENTLEY State University, Knoxville

SECTIONAL VICE-PRESIDENTS

EAST TENNESSEE—A. I. Smith Knoxville

MIDDLE TENNESSEE—James Webb Smithville

WEST TENNESSEE—Charles Pennington Rutherford

OFFICERS OF THE

STATE BEEKEEPERS' ASSOCIATION.

PRESIDENT

JOHN DAVIS Spring Hill

SECRETARY-TREASURER

J. M. BUCHANAN Franklin

SYNOPSIS OF THE TALKS GIVEN ON THE AGRICULTURAL SPECIAL TRAIN DURING JULY AND AUGUST, 1912.

I.—THE TREE THAT MAKES THE ORCHARD.

In this talk was discussed the great importance to the fruit growers of being able to recognize the kind of trees, the age of trees and the site for the tree before placing their orders. Attention was also called to the importance of recognizing the inspection certificates, one of which should accompany each order of trees, shrubs or vines, warning being given to accept from no one an order not having same thereon. Prospective fruit growers were also advised to buy their trees from representative nurserymen, those having a reputation and those who were desirous of retaining their reputation. The dangers of dealing with the "Fruit Tree Agent" were brought forcibly to their attention.

II.—SPRAYS AND SPRAYERS.

In this talk force was laid upon the simplicity and the efficiency of spraying. It is recognized by all that to read about spraying seems to incorporate a condition of details which to the average farmer, truck grower and fruit grower, seems to have too much detail to be practicable. In this talk the easiness with which such spray material could be made and applied was forcibly shown to the audience by means of simple spraying material being prepared before their eyes and applied with simple spraying apparatus. The types of spray material were grouped under two heads; those for killing insects and those for controlling diseases. The importance of discontinuing the use of Paris green, due to Tennessee not having a Paris green law was dwelt upon. In its place the audience was advised to use arsenate of lead either in paste or dry form. To the people in West Tennessee growing cotton the application of the dust form of arsenate of lead to control the cotton leaf-worm (*Alabama argillacea*) was strongly recommended at the rate of 4 pounds to the acre. To the potato growers the use of either dry or paste form of arsenate of lead was recommended at the rate of 3 pounds to 50 gallons of water. For the fruit growers, to control the codling

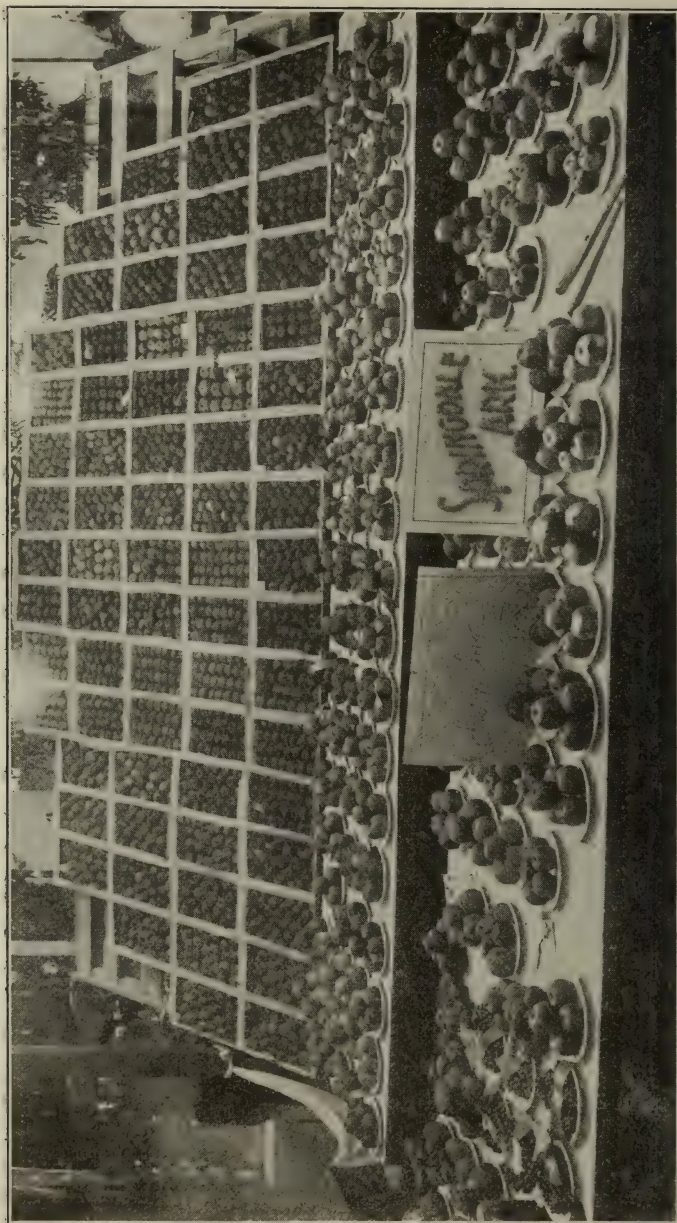
moth, as well as the curculio, the paste form of arsenate of lead at the rate of 3 pounds to 50 gallons of water was recommended. For the control of San Jose scale on fruit, shade or ornamental trees the use of the boiled lime-sulphur solution applied during the late winter and early spring months was recommended. This spray could be made as well at home as the form purchased.

The brown rot of the peach, one of the most destructive diseases to the peach interests in Tennessee, was discussed and the simplicity of making and applying the sure remedy, self boiled lime-sulphur solution, was thoroughly explained. The use of this weak form of lime-sulphur to control the apple scab, sooty fungus, etc., was briefly given.

The salient principles of a sprayer were discussed and much emphasis laid upon the selection of a sprayer fitted for the work at hand. Many times a small sprayer having a definite use for spraying potato vines and low shrubbery would be used for spraying high trees, thus it becomes a toy, thereby being a loss of time, and no efficient results being forthcoming. In selecting a sprayer the speaker dwelt upon the things to be sought, viz: simplicity, durability and efficiency; the importance of a sprayer having a good agitation and with the heavy parts low, were mentioned. In buying a barrel sprayer one can save about \$2.00 by getting from the sprayer manufacturer only the metal working parts. The importance of equipping a sprayer with from 20 to 25 feet of hose also a 10 foot extension rod and a nozzle which will give a fine forcible spray was emphasized.

III.—OUR INSECT FRIENDS AND ENEMIES.

In this talk the importance of the farmer, fruit grower, nurseryman and trucker recognizing insects and the kind of sprays to use for controlling same were dwelt upon. The speaker by means of charts and lantern slides showed many of the common insects and told the audience that the kind of sprays to use was governed by the mouth parts of the insect; that all insects could be divided into two classes: those having biting mouth parts like the potato beetle, the wire worm, the cotton leaf worm, curculio, the codling moth and those having piercing mouth parts like the mosquito, squash bug, plant lice, scale in-



Fruit Exhibit at Tri-State Fair, Memphis, Tenn. Tennessee Fruit Makes up the Major Part of Exhibit, and Takes Most Blue Ribbons.

sects and many flies. The importance of recognizing our friends among the insects was dwelt upon, the speaker mentioning those which were very beneficial in keeping in check injurious insects. Among the ones described were the ichneumon flies, the braconid bees, the tachina flies, the dragon flies, mantis, lady beetles, etc.

EXHIBITS.

The exhibition which this department had on the train was a car containing the representative large and small fruits of the State as well as the vegetables. Different forms of nursery stock were exhibited, all being carefully labelled. A collection of economic insects carefully placed and labelled in Riker mounts attracted considerable attention. A full array of spray mechanics from the simpler to the higher types were set up and intact for use. Charts representing the two great classes of insects, biting and piercing, were shown, as well as a complete collection of the effective insecticides and fungicides.

Equipment for a modern apiary was also exhibited and a hive of living Italian bees. Literature on all the above mentioned lines was distributed and the names of the interested persons taken for placing in the permanent mailing list in this Office.

As a result of the work done on this Agricultural Special Train, we have in this Office added some 1,500 names to our permanent mailing list. Daily we are receiving letters from persons who have never before taken advantage of our work and we feel highly gratified as to the beneficial results of the co-operation of the railroads in extending and introducing the Agricultural interests of Tennessee.

THE TREE THAT MAKES THE ORCHARD.

This being preeminently an age of preventions which reach nearly all avenues, it is in order to mention a few things in regard to fruit growing which will come under the head of preventive rather than remedial measures. Too few of the prospective fruit growers get sufficiently acquainted with the tree which they wish to plant, the characteristics of the tree, the diseases and insect pests seeking the life of the tree, before making their selection from the nursery list. Spraying and pruning have been discussed so thoroughly and have created so much interest during the past

few years that everybody is doing it; everyone has come to recognize these practices as profitable, but frequently other things more far-reaching have become established and it is of little or no avail to strenuously apply the shears and the spray as a panacea for all troubles and ailments of the trees.

The prospective fruit grower, if he wishes to plant one tree or one thousand, should first decide upon the fruit he desires or his commission man demands, and then learn something about the tree, selecting for it the best possible site and giving it the preliminary attention, such as properly setting it out, cultivating it, pruning it and spraying it. It is a waste of one's time and money to select ever so choice a type of fruit and set it out ever so carefully if he does not know the right kind of tree to set out. By the right kind of tree I mean a tree which will do well under the prevailing climatic and soil conditions, a tree free from disease and insects and one to make a machine through which fruit will be produced, giving it the best care and attention. First and foremost, one should deal slowly with the "Tree agent" who appears at your door and talks much in regard to the trees which he sells as being better than the other man's, and one who will have a long list of specialties sold only by himself, trees which will not blight, etc. I say, beware of that man.

Trees should be purchased only from reliable salesmen, or better still direct from the nurserymen—those who have a reputation and who are desirous of retaining it. After your selection has been made of those types of fruit which you would care to have; those representing fruit from the early, mid-season and late varieties, it is of vital importance that you demand and insist upon getting young trees and those free from dangerous insect pests and plant diseases. The young tree, that is one not over one year old, will establish itself more quickly, grow off better and produce fruit earlier than the two, three, or four year old tree which so many of the uninitiated are desirous of obtaining.

As the shipping season of fruit trees has come again and many of you are anticipating a notice that your shipment is at the station, it may not be amiss to call attention to a few things which you should notice concerning the shipment. First, you should look for an inspection tag, stating that the stock grown in

the nursery has been inspected and found apparently free from dangerous insect pests and plant diseases. This certificate tag should bear a number and be dated for the present year. Upon opening the package each tree should be carefully looked over and see if any indications of San Jose scale, woolly aphis, crown gall or hairy root can be found. Should the slightest trace of either of these quarantined troubles be found upon the trees do not accept them; for the nurseryman has no right to sell, exchange or even give away trees thus affected. It is right here that precautionary steps may be taken which will go farther than any remedial measures adopted after the tree has become grown. This holds true especially for the root troubles, such as woolly aphis, crown gall and hairy root, for these once introduced into your orchard cannot be eradicated. It is too late then to prune and spray and reach these troubles; therefore, learn to recognize unhealthy nursery stock and do not by any means accept an order so affected.

After examining your trees and finding them to be of the age desired, and free from all the above mentioned troubles, plant them out immediately. Do not "heel" them in and let them pass the winter in a furrow with dirt loosely packed around them. The writer has found very few people sufficiently acquainted with trees to know exactly how to "heel" them in so that they will keep through a period of three or four months. It is far better to have the ground prepared and set the trees immediately upon receiving them. Another precautionary step which is far reaching in its results is the setting of trees purchased from nurseries near your home. Too many of us are inclined to buy articles from some distant section thinking that they will be better than those produced nearer home. In selecting fruit trees, my advice is to select the trees grown near you, plant them while they are still fresh and avoid all chances of injury and death from drying and cold.

In planting trees here in the South we should select the higher ground; try in every case to have good air drainage. Frequently the loss resulting from late frosts will be evaded in this simple, inexpensive way. Ridge and mountainous land are cheap in this State and when accessible prove the best for fruit growing.

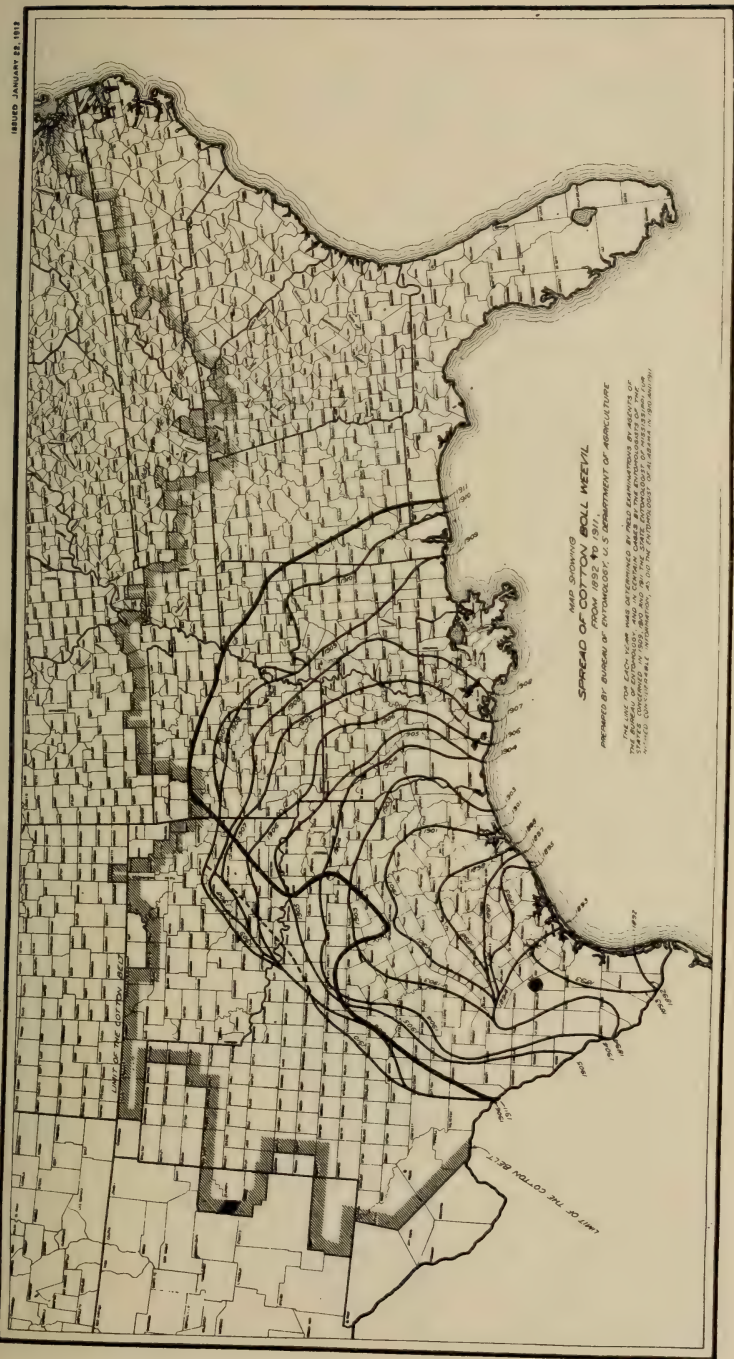
Do not ever think that you can grow a tree without giving it care and attention. It is folly to think of planting a tree, then going away and leaving it a few years expecting to return and find the tree loaded with luscious fruit, and that all that is necessary to do is to pick and sell and bank the profits. It would be just as logical to think of tying a young colt to a straw stack and leaving him there for three or four years, returning expecting to find him a well developed horse. It is simply marvelous on the other hand to see what a tree will do for a man if given half a chance.

For the fruit grower there is much to be gotten from the study of fruit exhibits. From these the character of different fruits may be learned and competition among the exhibitors awakens in one a desire to know how such fine types were grown, how the trees were pruned, varieties, how cared for and in a search for these he not only secures that which he seeks, but he derives an inspiration that makes him produce from his lands crops which were formerly thought to be impossible.

COTTON BOLL WEEVIL QUARANTINE FOR TENNESSEE.

Pursuant to the recommendations of the Association of Cotton States Entomologists held in Atlanta, December 5 and 6, and in Washington, D. C., December 29, 1911, the following restrictions are made on the shipment of the following articles coming from any state partially infested with the Mexican cotton boll weevil (*Anthonomus grandis*):

1. Seed cotton.
2. Cotton seed.
3. Seed-cotton sacks.
4. Cotton-seed sacks.
5. Cotton pickers' sacks, any of which have been used within eight months for any of the purposes indicated.
6. Cotton-seed between Aug. 1 and Dec. 31.
7. Spanish moss and corn in shucks between Oct. 1 and June 30.
8. Living weevil or weevil stages or weevil work in possession of any person outside of the infested territory except a qualified entomologist.



Cotton Boll Weevil dissemination

9. Household goods containing any of the foregoing, during the period of quarantine applied to each.

There are no restrictions placed upon the following items at any season:

1. Baled cotton, flat or compressed.
2. Linters and loose cotton lint.
3. Cotton-seed meal, cake and oil.
4. Corn shelled or in the ear, with shuck removed, oats or any other seed except cotton seed.
5. Cotton seed shown by affidavit to have been sacked continuously for nine months or more.
6. Cotton seed for planting purposes after fumigation with carbon dioxide by a competent entomologist.
7. Hay.
8. Empty freight cars.

The principal object of the Association of Cotton States Entomologists is to secure uniformity of state laws in regard to the cotton boll weevil quarantine.

The cotton boll weevil has not as yet been found in Tennessee. Its nearest approach is in De Soto County, Mississippi. The distance between the last dispersion line, made in November by the U. S. Bureau of Entomology, to Memphis is ten miles. The accompanying map shows the dissemination of the weevil since 1892, the heavy line indicating its limits for 1911.

A detailed map of Tennessee, showing all 95 counties. Each county is labeled with its name. The map is oriented with North at the top. The counties are arranged in a grid-like pattern, with some counties having irregular shapes. The map is a black and white line drawing, with county names printed in capital letters within each county boundary. The names are arranged in a way that is easy to read, with some names rotated 90 degrees to fit the shape of the county. The map is a standard reference map of Tennessee, showing the state's borders with other states and the location of major cities and towns.

The cross lined counties show area infested with the Texas Fever tick when the work of eradication in Tennessee began. At that time 43 counties were quarantined. To-day December 20, 1912, there are only 8 counties or parts of counties, which are yet in quarantine on account of the Southern cattle tick. The people in these counties are co-operating with the State and Federal authorities in tick eradication work and it's only a question of a short time until they will be freed of the cattle tick and released. Convincing indeed are the results of the feasibility, and practicability of tick eradication.

Map Loaned by State Live Stock Commissioner

COUNTY CORRESPONDENTS.

DEAR SIR:

The State Board of Entomology is desirous of coming more closely in touch with the outbreaks of injurious insects and plant diseases in the different counties of the State. To forward this object we have decided to appoint two or more correspondents in each county in the State, their duties being to report the conditions of crops and injury to the same by insect pests and plant diseases and to distribute bulletins or other information of timely importance. At present we have some two hundred persons in the State who are acting as county correspondents. Their work has been of great value to their community and to the State Board, both being materially helped by the information received.

In the annual reports of this Board mention is made of the county correspondents and their observations. For services rendered the literature of this Board; bulletins of the U. S. Department of Agriculture and of many of the Experiment Stations will be sent you. Letters of inquiry from county correspondents will be given special attention. If you can co-operate with the Board and act as one of its county correspondents in your community we will indeed be very grateful to you.

From the enclosed you will learn the duties of this Board.

Hoping to hear favorably from you at an early date, I am,

Very truly yours,

State Entomologist and Plant Pathologist.

MONTHLY REPORT OF COUNTY CORRESPONDENT

FOR

TENNESSEE STATE BOARD OF ENTOMOLOGY

Name
 Post Office..... County.....
 R. F. D..... For Month of.....191..

FRUIT TREE PESTS

1. Apple
2. Cherry
3. Peach
4. Pear
5. Plum
6. Any others

CEREAL AND GRAIN CROP PESTS

7. Barley
8. Millet
9. Oats
10. Rye
11. Wheat
12. Any others

FIELD CROP PESTS

13. Alfalfa
14. Clover
15. Corn
16. Cotton
17. Cow Peas
18. Meadow and Pastures.....
19. Soja Beans
20. Sorghum
21. Tobacco
22. Any others

VEGETABLE PESTS

23. Asparagus
24. Beet
25. Bean
26. Cabbage
27. Cantaloupe
28. Celery
29. Cucumber
30. Irish Potato
31. Lettuce
32. Onion
33. Pepper
34. Squash
35. Sweet Potato
36. Tomato
37. Turnip
38. Water Melon
39. Any others

VINE AND BUSH PESTS

40. Blackberry
41. Grape
42. Raspberry
43. Strawberry
44. Any others

ORNAMENTAL AND SHADE TREE PESTS

.....

.....

.....

HOUSEHOLD PESTS

.....

.....

.....

.....

.....

STORED GRAIN PESTS

.....

.....

.....

DOMESTIC ANIMAL PESTS

Cattle

Horse

Sheep

Swine

Fowls

PESTS OF THE HONEY BEE

.....

.....

- A. Is there a commercial orchard in your section?.....
- B. Are fruit trees or strawberry plants grown for sale in your section?...
- C. Give on the following lines the names and addresses of persons keep-
ing honey bees in your county or community:

Name	Postoffice	R. F. D.
.....
.....
.....

- D. Do the fruit growers in your section spray their trees?.....
- E. Do you think that the fruit growers near you would be interested in
an orchard demonstration, giving approved methods of pruning and
spraying?
- F. Give below the names of persons wishing Bulletins and information
from this Department:

Name	Postoffice	R. F. D.
.....
.....
.....
.....
.....

COPY OF CIRCULAR LETTER SENT TO THE EDITORS
OF TENNESSEE NEWS PAPERS

KNOXVILLE, TENN., August 13, 1912.

DEAR EDITOR:

I am enclosing herewith the names and addresses of the County Correspondents for the Tennessee State Board of Entomology in your county. The enclosed letter will explain the work of these correspondents in the State. By having their names and addresses published in your paper, also a brief outline of the duties of the State Board of Entomology I believe that much good will be accomplished and many more get the benefit of the work of this Department.

I hope that you will carefully read the enclosed letter and with us will recognize the importance and necessity for information dealing with insect pests and plant diseases attacking the products of the Farm, Orchard and Garden. Topics of this nature in these days of high cost of living should appeal to those living in the city as well as those on the farms.

Under a separate cover I am sending to you some of our Bulletins from these and on the back of the enclosed card the scope of the duties of this Board may be learned.

Trusting that you will be sufficiently interested to make mention of the above in the columns of your paper and state that Bulletins treating insect pests and plant diseases may be had by addressing the writer. Thanking you for past favors and for your continued co-operation, I am,

Sincerely yours,

State Entomologist and Plant Pathologist.

P. S.—Please send a copy of your paper with mention.

THE FOLLOWING CIRCULAR LETTER WAS SENT TO
THE COTTON GROWERS OF THE STATE
AS WELL AS TO THE NEWS PAPERS.

Knoxville, Tenn., Aug. 13, 1912.

DEAR EDITOR:

I am enclosing herewith a circular letter of importance which if printed at once in the columns of your paper may prevent great loss to the cotton interests of our State.

I would thank you very much for printing in full the enclosed letter and calling especial attention to the importance of the timely advice.

Thanking you for your past courtesies and co-operation and in advance for calling attention to this timely notice, I am,

Sincerely yours,
State Entomologist and Plant Pathologist.

P. S.—Please send me a copy of your paper including the notice.

AN OUTBREAK OF THE COTTON LEAF-WORM MAY BE EXPECTED IN TENNESSEE THIS YEAR.

Knoxville, Tenn., Aug. 13, 1912.

TO THE COTTON GROWERS OF TENNESSEE:

The cotton leaf-worm which was prevalent in many parts of the cotton growing section in Tennessee last year, several weeks ago made its appearance in southern Texas, and has advanced to southern Alabama. It is more than likely that this caterpillar will be in Tennessee at an early date. Due to the fact that the cotton is fully three weeks later this year than in 1911, an outbreak of the cotton worm this year would be disastrous to the cotton interests.

In order that the least possible amount of injury may result from this cotton pest I advise that as soon as the worms make their appearance that an application of powdered arsenate of lead be applied; by this means the loss may be lessened and the cost of poisoning be reduced to a minimum.

Last season it was impossible for many planters to obtain poison until considerable damage had been done. This season, however, large stocks of poison are available at different points in the South and there is consequently no reason why the outbreak should not be checked in the beginning. Arrangements have been made with the Van Vleet-Mansfield Drug Company of Memphis, also with the Spurlock-Neel Drug Company of Nashville, to have an ample supply of the powdered lead arsenate. I would advise having some of this poison on hand for immediate

application upon discovering the worm. The powdered arsenate of lead may be used at the rate of four pounds to the acre.

Information of the outbreak of this cotton pest in Tennessee will be gladly received.

Sincerely yours,
State Entomologist and Plant Pathologist.

REPORT OF APIARY INSPECTOR.

Nashville, Tenn., Dec. 19, 1912.

To the Tennessee State Board of Entomology.

SIRS:

I respectfully submit the following report of my duties as Inspector of Apiaries for the first six months of my commission:

My commission as Inspector of Apiaries for Tennessee was received June 6, 1912, and I at once entered upon my duties as such, in accordance with House Bill No. 70, Acts of 1911. Former Inspector, J. M. Buchanan, of Franklin, Tenn., turned over to me the names and addresses of about eight hundred Tennessee bee-keepers that he had collected during his service. To each of these I mailed a copy of the Apiary Law and the following announcement of the change in the inspector:

"This announces the appointment of Dr. J. S. Ward as State Inspector of Apiaries, to fill the vacancy lately made by the resignation of J. M. Buchanan, of Franklin, Tenn. Dr. Ward asks the co-operation of the bee-keepers of the State in his efforts to protect the honey industry from the different bee diseases. Correspondence is solicited, and reports of bee diseases will be given prompt attention.

Address, Dr. J. S. Ward, State Inspector of Apiaries, Nashville, Tenn."

The month of June was spent in doing inspection work, mostly in Davidson, Maury and Rutherford counties. Only one yard was found infected with foul brood. This was given radical treatment, with satisfactory results. This month's inspection work, however, was without guidance so far as reports of diseases was concerned, and much of the time was used in giving instruction in the more approved methods of bee-keeping.

The Tennessee Agricultural Train started on its tour over

the State on July 1st. On July 4th, the Chairman of the Tennessee Board of Entomology instructed me to at once join the train at Franklin, Tenn., with an apiary exhibit, and spend the months of July and August in an educational campaign in the interest of the bee-keeping industry. The exhibit being hastily prepared, was not as complete as desired. It consisted, however, of observatory and working hives, with frames of foundation drawn comb, division boards and queen excluder, extractor, an uncapping melter, smoker, veils, hive tools, feeders, extracted and comb honey, specimens of Caucasian, German and Italian queens, and a good working colony of bees in an observatory hive, with super. This apiary exhibit, while small, proved one of the most attractive exhibits on the train. A working colony of bees in an observatory hive with glass sides, so the bees could be seen in their movements over the comb, was an interesting revelation to the thousands of people who passed through the train. Demonstrations and instructions in bee-keeping were given in the car by the exhibit at every stop the train made throughout the State. In addition to these demonstrations in the car, about one hundred open-air lectures were given on bee-keeping as a practical and profitable industry. Literature on bee-keeping as a practical and profitable industry was distributed until the supply was exhausted. Much interest was manifested in the modern methods of keeping bees, with many calls for bulletins, books and pamphlets of instruction.

The names and addresses of bee-keepers and those interested in the honey industry were gathered at every stop the train made. These have been filed, both alphabetically and by counties, for ready reference and convenience in mailing out bulletins and other literature of instruction.

While on the train we were particularly impressed with the need of education and instruction in bee-keeping among bee-keepers. Old and unprofitable methods should be discarded and all the practical modern methods should be taught, so as to be able to gather the tons and tons of honey that are going to waste every year. Thousands of acres of Tennessee soil are covered every spring with white clover blossoms, from which we get the finest of honey. This natural resource of wealth should not

be allowed to go ungathered because of ignorance. According to the last census report issued by the Government, Tennessee ranked third in the number of hives or colonies, but only fifth in honey production. This low place in honey yield grows out of the fact that the majority of the three hundred thousand colonies in the State are kept in old-fashioned "gums" or home-made boxes, and cared for after impractical and unprofitable methods. This is not as it should be, and your Inspector of Apiaries will exert himself to develop the industry through lectures, demonstrations and the mailing of bulletins, circulars and letters of instruction.

This educational work, however, will be much hampered by the present small appropriation. One Thousand Dollars falls far short of the needs to promote this industry. The annual income from honey and wax is only about Twenty-five Thousand Dollars, when the available natural resources are approximately two million dollars.

The work on the Agricultural Train stopped September 1st. Inspection work was then resumed and continued until cold weather. Most of the work was done in Robertson, Williamson and Bedford counties. The losses from diseased colonies in Bedford county were heavy. Whole apiaries were wiped out with black brood, and the bee-keepers discouraged. Nearly two weeks were spent in this County treating colonies and giving instruction. At no place was my inspection work resented. Every bee-keeper was willing and ready to co-operate with me.

After advising with the Board of Entomology, a lantern outfit was purchased for giving illustrated lectures on Bee Culture during the winter months. Lectures with and without the Lantern have been given during October, November and December, at the following places: Jackson, at the West Tennessee Farmers' Convention; Failfield, Water Valley, Bellbuckle, Nashville, Capers, Egansville, Smyrna, Bethel, with two other engagements at Oakland and Dosset that failed. Sickness prevented a lecture at the Middle Tennessee Farmers' Convention at Nashville.

The number of reports of bee diseases have been disappointing. The fear of having their bees destroyed, or discouragement and indifference, or a lack of confidence in curative and pre-

ventive treatment, or ignorance of the Apiary Law, has made the bee-keepers slow about reporting troubles.

After studying the conditions of the honey industry in Tennessee for these six months of my commission, I have outlined the following plan of work for the remaining winter months: First, to continue the lecturing; second, to obtain, as far as possible, the names of all the bee-keepers in the State; third, to mail out literature on bee-keeping; fourth, to invite co-operation and insist upon reports of bee diseases. A tabulation of all reports will be kept and arranged for a vigorous inspection campaign in the early spring. To obtain the data necessary for the most effective work, the following letter was mailed out in December to the bee-keepers in the State:

Dear Sir:—It is the purpose of the Tennessee Inspector of Apiaries to aid the bee-keeping interest of the State in every possible way. Bulletins, circulars, etc., on bee-keeping will be mailed out from time to time.

Illustrated lectures on bee culture will be given during the winter months, with field demonstrations during the spring and summer months. Especial attention will be given to the reports of bee diseases.

We ask for the co-operation of the bee-keepers in this work, and kindly insist upon your answering the following questions and mailing them to me in the enclosed envelope:

1. Your name and address.
2. What race of bees do you keep?
3. How many colonies of bees have you?
4. How many are in patent hives?
5. How many are in old-fashioned "gums"?
6. Do you work for extracted, comb or chunk honey?
7. What is your principal source of honey?
8. Are you troubled with any plant yielding bitter honey?
9. What is your average yield of honey per hive?
10. Have your bees been affected with any diseases? If so, please state fully the nature of the trouble.

11. How many hives did you lose last winter, and from what cause?
12. Have any bee diseases been reported in your neighborhood?

Please give me the names and addresses on the enclosed blank, of all persons in your community who keep five or more hives of bees.

Very truly,

J. S. WARD,

*Inspector of Apiaries,
Nashville, Tenn.*

Inspector's expense account for the first six months of his Commission:

June	\$ 67.98
July	97.63
August	104.00
September	118.92
October	106.50
November	96.41
	<hr/>
	\$591.44

Respectfully submitted,

J. S. WARD,

Inspector of Apiaries.

NOTICE.

The following bulletins have been issued by the Tennessee State Board of Entomology and copies will be mailed to anyone writing for the same. Address Tennessee State Board of Entomology, Knoxville, Tenn.

Bulletin No. 1. Law creating the Tennessee State Board of Entomology—Rules and Regulations.

Bulletin No. 2. The Fumigation of Nursery Stock—Law and Amended Rules and Regulations.

Bulletin No. 3. The Control of Insects, Fungi and Other Pests.

Bulletin No. 4. The San Jose and Other Injurious Scale Insects of Tennessee, with Methods for Their Control.

Bulletin No. 5. Orchard Management in Tennessee.

Bulletin Vol. 1, No. 2. Amended Law Creating the Tennessee State Board of Entomology—Amended Rules and Regulations. Apiary Inspection Law.

Bulletin Vol. 1, No. 3. The Inspection and Transportation of Nursery Stock in Tennessee, Other States and Canada.

First Annual Report of the State Entomologist and Plant Pathologist, 1905.

Second Annual Report, 1906.

Third Annual Report, 1907.

Fourth Annual Report, 1908.

Fifth Annual Report, 1909.

Sixth Annual Report, 1910.

Seventh Annual Report, 1911, Vol. 1, No. 1.

SUGGESTIONS ON MAILING SPECIMENS.

Questions pertaining to insects and plant diseases will be gladly answered. All requests should be accompanied by specimens. These should be sent, not in a letter, but in a tight tin or wooden box with no openings, addressed to the State Board of Entomology, University of Tennessee, Knoxville, Tenn. If possible, send some of the food of the insects, together with their work. Wrap all neatly, placing your own name upon the package. In a letter tell all you have noticed about the insect, as to its food, its first appearance, abundance, extent of injury, etc.

A collection of Tennessee insects is being made, and any assistance in adding to this collection will be greatly appreciated.

PROCEEDINGS
OF THE
TENTH ANNUAL SESSION
OF THE
**Middle Tennessee
Farmers Institute**

HELD AT
NASHVILLE, TENN.
DECEMBER 5, 6 AND 7, 1911

"In Agriculture is the hope of the Nation.
It is the foundation upon which everything rests."

DEPARTMENT OF AGRICULTURE
T. F. PECK, COMMISSIONER
NASHVILLE

COMPILED BY
E. O. LUTHER, CHIEF CLERK

NASHVILLE, TENN.
PRESS OF BRANDON PRINTING COMPANY
1912

Foreword

The Department of Agriculture is presenting to you in the following pages the proceedings of the Tenth Annual Convention of the Middle Tennessee Farmers' Institute, which convened at Nashville, December 5, 6, 7, 1911. In the opinion of many, this was the most successful and largely attended Convention in the history of the organization. With the exception of the Commissioner, the success of the Institute was due more to the efforts of Hon. Jesse Tomlinson than to any other one man. The interest manifested in this Institute very clearly shows that there is a wide-spread feeling that something ought to be done for a better and more permanent system of agriculture. No one is more alive to this necessity than the progressive farmer, and no one than he better understands that the problem demands a knowledge of local conditions, the needs of the soil, its chemical constituents and how to balance and restore and maintain plant food. This man knows that agriculture is not merely plowing, sowing and reaping, any more than cutting a man's arm off with an axe is surgery. The most intelligent farmers realize the need, and will be glad to have, the assistance of a soil chemist and trained agriculturist to work with them, that they may apply in practice the great fundamentals of the art of production.

The tendency of the times is toward intensive rather than extensive farming; to induce a more thorough cultivation of the land, which means smaller farms, a larger rural population, and a higher standard of living. When new methods become the standard practice on the farms of our country, it should, in the opinion of such men as Secretary Wilson and others, at least double the yield. If this can be done we shall add to our wealth each year a sum two and one-half times greater

than all the gold, silver and paper money in the United States combined.

In the prosperous, contented and enlightened rural population, knit together by countless units of family farms, lie the hope of our State and Nation, the bulwark of the future.

EMERSON O. LUTHER,

Chief Clerk.

Middle Tennessee Farmers' Institute

FIRST DAY—TUESDAY, DECEMBER 5, 1911.

MORNING SESSION.

The Tenth Annual Convention of the Middle Tennessee Farmers' Institute was called to order at 10:00 o'clock a.m., in the Hall of the House of Representatives at the State Capitol, Nashville, by the President, Sam N. Warren.

Prayer by Rev. James I. Vance, Pastor of First Presbyterian Church, Nashville.

WELCOME ADDRESS.

The following Welcome Address from Gov. Ben W. Hooper was read by his Private Secretary, Col. Geo. C. Taylor:

Mr. President and Gentlemen of the Middle Tennessee Farmers' Institute:

By force of unavoidable circumstances, I am compelled to greet your organization to-day by proxy, instead of in person, as I had hoped to do.

"The man behind the gun" has been glorified in song and story, but the man behind the plow is of vastly more importance to the nation. His work constitutes the basis of national prosperity both in peace and in war. Unsustained by the products of his toil, industrial armies would perish and military legions would be conquered without the roar of a gun or the flash of a sabre. A drouth in the West or the boll weevil in the South can send a chill down the spinal column of Wall Street more quickly than the ukase of a czar, the bull of a pope, or the proclamation of a president.

In my inaugural address, I took occasion to make the following statement:

"The improvement of our Agricultural Department and the development of our agricultural interests is a subject worthy the best thought of this State. Considerable headway has been made along this line during the last few years, but the importance of the work of this department has not been fully recognized by many of our people. The high prices of farm products, the wearing out of our farm lands, the lack of diversification of crops, the failure to get the best results from our soils, the lagging of our State in the raising of live stock, the importation of millions of dollars worth of food and feed stuffs that we could produce ourselves, and, above all, the accelerated rush of population from the country to the city, call for intelligent strengthening of the Agricultural Department. The greatest opportunity that now lies before any public official in Tennessee is that furnished by the work of the office of the Commissioner of Agriculture."

During the short period that has elapsed since that date the systematizing of the work of the department, the elimination of superfluous subordinate officials, the increased efficiency of those remaining, the lessening of expenditures, the increase of revenues, the effort to completely divorce the department from party politics, the placing of a trained veterinary in charge of live stock inspection, the bringing of the work of this department and others closer to the people by the agricultural train, the establishment of county demonstration farms, the weekly talks to the farmers through the press of the State, and the inauguration of the work of the Immigration Bureau, are all evidences of progress.

There are several questions of public concern apparently disconnected from the direct work of upbuilding the agricultural interests, which are, in fact, closely related thereto.

If the tide of immigration from the country to the city is checked, it will be done by increasing the facilities for comfortable living and social enjoyment in the rural districts. The first step in this direction is the construction of improved

public highways, shortening the distance from the home to the church, the school house and the market. The second step is the consolidation of the rural schools and the conversion of the consolidated schools into the "community center," the hub of all the social, educational and amusement activities of the community. Thus two steps will lead to the acquisition of many of the pleasures, comforts and refinements of modern life which now lure the country boy to the city and make the farmer's wife in remote and inaccessible districts a domestic drudge and a social hermit.

In the building of a system of good roads, we need not expect any immediate aid from the Federal government. Self help is the quickest and surest help. There should be a law passed, however, providing for State aid, the co-operation of state and county in the building of public highways.

Permit me, in conclusion, to express my most eager interest and cordial sympathy in the successful work of this Institute.

Respectfully,

BEN W. HOOPER.

RESPONSE TO ADDRESS OF WELCOME.

Hon. John Thompson, ex-Commissioner of Agriculture, of Nashville, was introduced and responded to the Address of Welcome as follows:

I am sorry that Governor Hooper is not present to extend a welcome to you, and while it was a good paper it takes away that spirit which would be present if our executive was here among us. I assure you that his heart goes out for the success of the meeting.

For four years I was Commissioner of Agriculture and the principal thing is to have the interest of the farmer at heart and get him to do something for himself. Farmers of Tennessee do less for themselves than any other farmers in any other State. A few enter the work in earnest and do things which will be beneficial to themselves as well as the State. Every interest is represented before the Tennessee legislature,

except that of the farmer, the representatives who are sent never attempting to legislate for the benefit of the sons of toil.

Anything that helps the farmers helps everybody in the State. We are here as farmers, not as any faction, and are neither Democrats nor Republicans, but have come together to learn how to make the farm more profitable. The farmers of Tennessee produce everything more cheaply than anywhere else on earth, as we have every kind of climate.

The farmers spend too much of their time talking politics, whittling goods-boxes, etc., and not enough interest is taken in farming. They do not work enough. Children should be taught something of agriculture in school and the farmers should get together and make conditions better.

President Warren announced that Mr. Suter, of the Tennessean-American, had invited the boys of the Corn Club to a theater party at the Vendome Theater at night, the play being, "Rebecca of Sunnybrook Farm."

ANNUAL ADDRESS OF THE PRESIDENT.

President Sam N. Warren, of Spring Hill, Tenn., then delivered his Annual Address as follows:

It is with great pleasure I greet not alone such a large number but such an intelligent and good looking body of farmers.

I am, however, disappointed in not seeing more young men and boys present, for the old saying, "It is hard to teach old dogs new tricks" makes our greatest hopes of improved conditions rest upon them.

Before this Institute adjourns we are going to show you some boys and what they have done that will make you feel very proud of them, and also, show that it is easier to inform twenty men than it is to reform one man. Perhaps, as Col. Thompson suggested, the farmer has at times been guilty of leaving undone many things he should have done, but I believe we are going to do better in the future, for conditions

have changed very much since most of us were boys, and we have got to make a change in order to keep up with the procession. But with the great work being done by the Commissioner of Agriculture of Tennessee, and the University of Tennessee, through Institute work and Bulletins and the kindness of the railroads in bringing us to these meetings we would be inexcusable did we not improve our conditions.

Agriculture lies at the basis of all other industries and general and continuous prosperity is dependent largely upon the prosperous condition of the farmer. Agriculture can only be made to reach its highest possibilities when it is directed by minds educated to understand the laws of nature that control germination and growth in fruit, vegetables, plant and animal life. So if we are not to fall behind we must educate ourselves in order that we produce the greatest quantities at the least cost. We must have more respect for our own calling, and instead of slaving and starving to educate the boy to be a lawyer or doctor, give him a chance to be an up-to-date farmer. Many good farmers are spoiled to make poor lawyers.

The occupation of farming and stock breeding is an old and honorable one. Cain was the first farmer, also, the first murderer, and he could not find a lawyer upon the face of the earth to defend him. Adam, we are told, was a tenant under a verbal lease, and he was fired because he committed waste, and a good many farmers from that time on have followed their examples of murdering time and committing waste upon the farm. Much of the hard times of farmers could be prevented by giving more attention to their own business. It takes brains to run a farm successfully and there is no industry where thought and intelligence pay better than on the farm. It isn't how many hours a farmer puts in, but what he accomplishes that counts. So plan your work that there is as little time as possible wasted in changing from one job to another and what you do, do it well. Good farming embraces tidiness and neatness in all things about the farm. I believe the time has passed in Tennessee to make much money at farming, unless it is combined with stock raising, and when this is done one of the problems of maintaining the fertility of the soil is solved, and don't forget

it costs no more to feed a thoroughbred than it does to feed a scrub. Carefully decide upon what breed you wish to handle and stick to it. I have been breeding Jersey cattle for thirty years, and have no hesitation in saying they are by long odds the best for dairy purposes, and if you will write me I will take great pleasure in furnishing you literature containing facts and figures that will bear out my assertion, and as the question has been asked as to which is the best make of cream separator for a farmer to buy I have no hesitation in recommending the "De Laval." There are a number of other subjects I might touch upon, but as they will likely all be covered by our program I will close. The ladies are going to have a hand in this Institute, and when the mothers and the boys start we all know there will be something done.

THE RURAL SCHOOL SITUATION IN TENNESSEE.

The President introduced Prof. J. W. Brister, State Superintendent of Public Instruction, Nashville.

Mr. Brister addressed the Convention as follows:

I appreciate, Mr. Chairman and Gentlemen, the opportunity of addressing this splendid gathering. I did not expect to speak at this session of the convention and therefore have not had time to organize the material I would like to present to you; but I do know that there will be a more favorable moment, and I want to take advantage of this to bring to your attention some matters of vital importance to you and every citizen of the State.

We hear a great deal these days about the high cost of living, and we are told there is too little production of the necessary things of life. Everywhere we are met with statistics as to the influx of men and women of the country to the cities; and the seriousness of the situation is evidenced by the universal interest which attaches thereto. Back to the farm is being urged, and if talk would bring it about the rural regions would be peopled to overflowing in a marvellously short time. But talking will not solve this problem; we must find the cause of the exodus from the country; we must learn

some way of increasing the attractiveness, of adding charm to rural life, or else the problem can never be solved. This is a matter of no small concern; it affects no small circle of people; it is not a partisan or sectional question; it concerns all men, the dweller in the city as well as the citizen of the rural region; it is of interest to the statesman, preacher, teacher, business man, to all that have their country's good at heart and desire continued prosperity and success.

I am going to make one suggestion towards its solution this morning. I have no panacea for all human ills; I have no key to all the questions that confront us. I have only one suggestion; but in it I believe are elements of truth that must be considered in the final solution of the problem. I picked up a paper in my office some weeks ago—an agricultural paper—on the front page of which was a splendid picture of an imposing edifice; and underneath it the editor had made this significant comment: "The new school building at——. If every rural community had such a school as this we would not long need to preach 'back to the farm'." The picture and the comment created a profound impression on me, and from that time to this I have continued to reflect on it; the more I have thought the more convinced I am of the reasonableness of the editor's comment.

There are many reasons why people leave their country homes for life in the city. The glamour of the city, the lighted streets, the attractions of the theaters, the big stores, the opportunities for improvement and social pleasure—all powerfully affect the young men and women, I believe, and draw them citywards. The drudgery of farm life, its isolation and loneliness, operate just as strongly in driving them thither. But I believe that if we could talk to the men who have come from the country to the city in these recent years and could ascertain the motive which prompted them, we should find that in the majority of cases their reasons could be classed under two heads: economical and educational. There are scores and hundreds of country people finding their way to the city in search of lucrative employment. They see little chance, they think, for productive employment at home; lands are high, opportunities scarce, labor not well paid for, what they

can buy with their scant wages offers little attraction, and they easily persuade themselves that a job in the city will give them more than the country can possibly offer.

And then, there is another class of country people, men with families, who have accumulated considerable wealth, who have some social aspirations and ambitions for their children, who realize the inadequacy of the country school to supply proper educational advantages; and they hasten away to the town or city to get the advantages of the schools for their sons and daughters. After they are educated, the father argues to himself, they will come back to the old home; and away they go, but alas! they never come back. I am convinced that more people of the desirable class have left, and are leaving, the country for the town and cities for educational purposes than for any other reason that may be assigned. And so I repeat, the comment of this agricultural editor is significant: that school building has a meaning; it has a direct bearing on this question which we are considering.

Let us see what is the meaning of this school and this building of which we are speaking. In a broad, general sense, it signifies universal education. We have theorized about universal education; we have talked about its desirability; and yet we have not realized it in our State or in any part of the Union. Universal education means all classes in the school. We are confronted at once right here with the problem of school attendance. You know how poorly our schools are attended in the rural regions, how indifferent many parents are to the matter of education for their children. We know, too, that this indifference is emphasized by the lack of proper houses and school equipment and short terms; and yet we know that if education is good for one class of people it is good for all classes, and we must prepare for the young people in the country facilities that will attract and bring them into the school. Universal education means equality of opportunity. The boys and girls of the country districts are just as deserving as those that live in the cities, and we want to see to it that they shall have educational opportunities as good as those enjoyed by the most highly favored in the land. We can never have a satisfactory system of schools with a term of

four or five months, such as exist in many of the counties of the State; with the poor buildings which have been provided; with the unprepared teachers, and with the scant equipment. If we go into our large cities, and even our towns, in Tennessee, we find splendidly equipped buildings, modern courses of study, well prepared and reasonably well paid teachers, school terms of nine or ten months; all a striking contrast to what is offered to the boys and girls out in the rural regions of the State. It is up to the men and women of the rural districts to see this contrast, to realize that it ought not to be and need not be; and that by the proper exertion on their part they can prepare for their sons and daughters educational opportunities as good as those offered in the large cities; and when this is done I feel confident that we shall have done more towards stopping the influx of emigration from the country than by any other agency that could be devised.

Universal education means also education for all classes. It is right here that we have made one of our fundamental mistakes. We have proceeded on the basis that practically all educated men would enter the professions, and our whole system of education from the beginning to the end has been for the benefit of the professional classes; but we are beginning to realize that education is good for other men and women as well; and besides this we are coming to understand that the type of education best suited to the boys and girls of the city is not necessarily the best for the rural regions. We do not want to educate young people away from their environment; we do not want to train them while they are at school so that they will be almost necessarily forced to go from their homes in later life, but we want to educate them so as to enable them to use and enjoy their environment. We cannot argue to the tax-payers of one county that it is to their advantage to give such educational opportunities to their children that they will go forth from this county to help build up some far-away city; but in every county we want so to educate the boys and girls that they will stay at home and help to develop the resources of their own county. We want in the rural regions an education that will fit for farm life. To this end it is going to be necessary to revise our courses of study and add to them agri-

culture, domestic science and kindred subjects which will relate the rural school directly to rural life. To this end also it is going to be necessary to revise the content of the subjects even now taught. We can have our problems in arithmetic to deal with the quantitative aspects of rural life; we can have our readers to treat of events and incidents and to give descriptions that are based on the country; we can have the literature of our schools farm-focussed, and we can make our composition work bear directly on these phases of life which are familiar to the country boys and girls. This does not necessarily mean that we are going to fail to familiarize them with the great world-wide events and with the facts of history of all times and all ages; but it does mean that we are coming to realize that that schooling which does not give these young people familiarity with the life about them, as well as with the larger life of the world, has not succeeded in doing what we have a right to expect. We need, of course, to carefully guard against going too far in the opposite direction in trying to correct a mistake which has long been made. It is not that we want to make a farmer of every country boy; we would commit just as egregious a blunder if we aim to make every country boy a farmer as we have heretofore made in trying to turn nine-tenths of them from the rural regions to city life.

Now, my friends, I believe this is something of what that editor meant when he said that a school of the type pictured there on his paper would be the strongest agency that could be devised to keep people on the farm; he meant school advantages within the reach of every boy and girl in the rural regions; he meant attractive surroundings; he meant reasonable length of terms, good teachers, courses of study which would appeal to the men and women of the country as well as to their sons and daughters; he meant educational opportunities in every rural region as good as those that could be secured in the richest city anywhere in our State. And I am convinced that when these opportunities are offered in the country, we shall have made a great advance towards increasing the productiveness and attractiveness of rural life, and therefore to have solved this most important problem that confronts us in America to-day.

May I, in closing, add this further word? If we are to have these educational opportunities which I have called your attention to it is necessary for us to radically revise our school system. I need not tell you of the inadequacy of the single-teacher, one-room school in working out such a plan as I have in mind. We can not add anything to the burden of the single teacher; already she has tasks beyond her strength, and if we are to vitalize our course of study, if we are to add those subjects which will make the school work of large practical as well as cultural value, we must combine our schools; we must enter upon a policy of consolidation which will bring one or two and sometimes three and four of these one-room schools into one center with three or four teachers, with graded work, with pupils properly classified. I need not take your time to argue the advantages of the consolidated school. There are two things always to be desired in a school—one, efficient teaching; the other as large a per cent as possible of the available school children in attendance. It is a fact attested to by universal experience that whenever two or three one-room schools are consolidated both of these results are secured. It is unnecessary to try to show you how in a consolidated school there are those inducements and attractions which draw a better class of teachers, that there are possibilities of classification and gradation which enable those who have specialized to enter upon the peculiar work for which they have prepared themselves, and, consequently, will enable them to render much more efficient service. I need not tell you that when this consolidated school has been built up in some central location, the people come to realize the greater efficiency which characterizes this institution and are more concerned about the attendance of their children. I need not state how this consolidated school becomes the center of community life, how it makes contribution to the social, industrial and economical life of the people as well as to the intellectual life. I need not tell you how it creates an interest on the part of the men and women and causes them to see in it a splendid agency for meeting all the interests of the rural community. I am happy to say to you that we have entered upon this policy of consolidation already in certain counties in Tennessee with most satisfactory results; and where ever it

has been thoroughly tried there has never been the slightest tendency to abandon it.

One thing more I ought to say, and that is, where ever we shall enter upon this policy of consolidation in dead earnest, the matter of transportation facilities for the boys and girls is necessarily involved. The only risk of failure at all with the consolidated school is because of lack of proper transportation arrangements. Whenever along with consolidation, the Board of Education is wise enough to make arrangement for transporting pupils back and forth from school, the success of the venture is absolutely assured. Some of the counties of the State, notably Madison and Shelby, have provided transportation facilities for their consolidated schools, and these two counties are entirely satisfied with the results of the work, and nothing could induce them to go back to the one-room school.

Right here I know we shall be met with the objection that we can not provide proper transportation facilities in Tennessee, and, consequently, that consolidation on a large scale is impracticable, if not impossible, because of our bad roads. And thus with one sentence the advocates of school progress are told to stand aside and wait until the question of roads has been settled. Now, gentlemen, I realize the desirability and necessity of good roads, and I want to say that the school people of the State are as much interested in the road question as any other citizen can be. We realize that our interests as school men are not in conflict with the other interests of the State, especially the material interests of the rural districts; but that in fact our interests are identical and that we are all working to the same great end. But I may say further that the school people of the State do not believe that the matter of consolidation can be postponed; in other States it is not being postponed. No State in the South has any thing like an ideal system of roads, and yet the work of consolidation and transportation has gone on in some of our sister States with very great success. In certain sections of Virginia, for instance, with no better roads than we have in Tennessee, the practicability of consolidation and transportation have been demonstrated beyond question. Virginia started in 1905 by expending about \$2,000 for transportation, and in 1910 the work had been so far advanced as to call for an expenditure

of approximately \$44,000. I know counties in the State of Tennessee which have fairly good roads and very poor schools, but I have yet to find a county which has good schools and bad roads. We can not afford to subordinate the school interests to any others, and I am sure that good schools will do as much towards bringing about good roads as good roads can possibly do towards securing good schools. What we want to realize, gentlemen, I repeat, is that we are working in a common cause, that both of these movements must go along together, and that in co-operating one with another we shall be much more apt to secure the desired ends than if we attempted to secure them independently.

Let me quote this recent utterance from the Superintendent of Public Instruction of Virginia:

"Most of the Virginia roads are bad—very bad—in winter. But it takes even worse roads than the average to prevent transportation of children. Good roads and good schools should go together; but since neither exists in many of our communities it is the purpose of the advocates of good schools to go right ahead, hoping that good roads will follow. Do not be deceived or misled by frequently uttered statements that we can not have consolidation of schools and transportation of children until we have better roads. You can hear this all over Virginia. It is true that good roads make it easier to have consolidation and transportation, provided the people are intelligently interested in their schools, but experience and observation show that good schools do not necessarily follow good roads. Experience and observation have shown that good roads do follow good schools and that consolidation of schools brings to bear on the county authorities great pressure for the improvement of the roads. I say to you frankly that if we wait in the South for good roads before beginning a movement for consolidation and public transportation we will make a fatal mistake."

The Virginia Superintendent speaks wisely. Consolidation, I am sure, is the condition of educational progress in Tennessee.

It is the next step that must be taken in educational advance. We can never hope to develop our rural elementary schools, to give the proper type of education in these schools; we can never hope to offer adequate educational opportunities to the boys and girls of the rural regions as long as we adhere to the single-teacher, one-room school. They must be abandoned as rapidly as circumstances permit, and we must establish in their stead larger school agencies better equipped for their work.

I bespeak the interest of you intelligent men who have come here on this occasion. As you go back to your homes let me beg of you to carry with you a greater interest in school affairs; let me persuade you, if I may, to appreciate more and more the value and importance of the educational process and of preparing for your boys and girls near their own homes such schools and such advantages as I have attempted to set forth. You know, gentlemen, that after all the thing most to be desired in the country is not fine farms, not beautiful homes, not fast horses, not splendid live stock, but a moral, intelligent, happy and reasonably comfortable people; and I make bold to say that of all the agencies which function for rural life nothing will do more to secure this thing desired than the proper type of schools in every section of the commonwealth.

AFTERNOON SESSION.

The Convention was called to order at 1:30 o'clock by President Warren. Capt. T. F. Peck, State Commissioner of Agriculture, was introduced and addressed the Convention.

In part, Capt. Peck said:

I recently attended a conference of immigration officials at Washington, D. C., met to confer as to the best method of handling the immigration question and the alien who has already landed. I heard expressions of the views of those attending. I said, at the convention, that Tennessee, while her doors are open wide and a hearty welcome awaits the homeseeker who wants to come among us and make a good citizen, proposes to use her efforts to stop the movement from the farm, by proving to our boys and girls that greater opportunities are open to them

in the development of our agricultural industry than they can find elsewhere.

Tennessee has furnished the brain and brawn to help develop Texas, Arkansas and other Southern and Western States. They have made good under conditions less favorable than those left at home; but they found people making the most of their opportunities, and they not only fell into the pace, but led it. If we had back in Tennessee the men who have succeeded in less favorable sections, we would be able to handle the situation and make the most of it. If we can stop the tide of immigration toward the cities and other sections, we can take care of the agricultural situation. We know the people we have in Tennessee. Indiscriminate immigration would certainly bring us many undesirable citizens.

The question confronting us is, How to keep our own people in Tennessee and win them back to the farm. It can be done if we will go about it in the right way.

There is no State in the Union where all the conditions favorable for success in farming are found as in Tennessee—soil, climate, rainfall, market facilities, etc. Our ancestors could make a success farming without irrigation, without any worry about droughts or destructive visitations of insect pests, or parching winds that would wipe out a crop in a few days. Everything was so easy that there was nothing to put them on the alert, so they planted and harvested with a pretense of cultivation, robbing the soil of its plant food, until finally the soil ceased to produce as it had produced, and the people began looking elsewhere for fertile lands.

Our educational system has been at fault, in that it has educated people away from the farm instead of to the farm, when common sense would show anyone that the large part of our population must live on the farm or go to other States.

It has been abundantly proven that our neglected lands can be reclaimed and made profitable while the work of reclamation is in progress.

Shall we keep as a heritage for our own people this Tennessee land, the most favored under the sun, or shall we say we are not capable of doing this work, and let this land of opportunity drift into alien hands, who will make it what we can, if we will?

I think we will fail in our duty as Tennesseans if we fail to take advantage of the opportunity open to us now, but which, if neglected, will slip away from us. How will we do it? How will we get our own people to realize and profit by the opportunity open to us? It will take co-operation; it will require concert of action; it will require a change of our educational system; it will require a co-operative movement of our people to improve rural conditions. We must have better rural schools; the country people are entitled to the same educational advantages as are afforded the cities and towns. Our public roads must be improved; this will make possible the consolidation of public schools with good teachers.

We are ready to make progress in this direction. Millions of dollars are being spent in road building. Our State normal schools are providing for agriculture in their work—practical as well as theoretical—the teachers trained there will carry the work of agricultural training to the public schools with practical demonstration. The county high schools are realizing the importance of the work of agricultural training, and I hope to see in connection with every county high school a county demonstration farm where parent and student can go together. While the student is learning about plant life, animal life, the formation of soils and all of the fundamental principles of agriculture, the parent can learn the methods of soil reclamation; he can observe the effect of deep tillage, of adding vegetable matter to store up moisture and improve the mechanical condition of the soil; the beneficial effect of adding crushed lime to sweeten the soil; the importance of saving and spreading barn-yard manures; of growing leguminous crops to store up nitrogen in the soil, where he can observe the effect of an intelligent rotation of crops; where he can see the value of a cover crop for his land in winter to prevent washing.

One of the important lessons that ninety per cent of our farmers need to learn to-day is the value of time, and to do the right thing at the right time, to push their work instead of letting it push them.

A properly conducted demonstration farm in connection with the county high school, equipped and conducted in reach of the average farmer, so that he could do the same thing, would

interest him—would help him, and the combination would give an impetus to education that nothing else would. The farmer would be convinced that his children were being educated along lines that would fit them for making an independent living.

Such a movement would solve the problem of rural life improvement; it would insure better public roads, better rural schools, better farms and better homes. It would attract desirable people; it would increase the value of property; it would uplift the rural sections in every way. When we have everything to gain and nothing to lose, why should we hesitate to take up the work?

I have not one word of criticism for the experiment station and colleges of agriculture—nothing but praise—but I want to build a foundation under them; I want to help the farmer of to-day to profit by their splendid work through the medium of the demonstration farm, and I want to start the school boys and girls of to-day along lines that many of them will want to complete in their training in agricultural colleges.

There is a demand for men who can take hold of farms or plantations and give them the same intelligent business management as the successful business man gives to his business. There are innumerable places for such men, at attractive salaries, but we have a scarcity of men to fill them.

Our educational system has turned out too many "Jelly-beans" and too few genuine, Simon-pure men who are not afraid of work; too many who look with loathing and contempt on any kind of honest labor, and too few with the common sense to make the most of the opportunity open to them. It is not want of opportunity, but capacity to profit by it when it offers. I want to see our own native Tennesseans wake up to the opportunity open to them, which, if neglected, will be taken up by others who are awake and willing to meet opportunity with open arms.

We have soil capable of the highest state of development, and we have a climate in which we can grow any crop grown in a semi-tropical country, and we can grow any crop the Northern farmer can grow, and so many that he can not grow; we have the rainfall, so that irrigation problems need not worry us; we

have transportation facilities that place us in touch with the markets of the world; we can, if we will, have perfect health; we have the finest people in the world if we would only wake up and make the most of our opportunity.

The President then introduced Mr. Frank D. Fuller, a representative of the United States Department of Agriculture, who gave a brief outline of the origin and history of the Boys' Corn Clubs.

BOYS' CORN CLUB WORK IN TENNESSEE.

Prof. Thos. A. Early, of the Bureau of Plant Industry, United States Department of Agriculture, in charge of Demonstration Work in West Tennessee, delivered the following address:

The Boys' Corn Club Movement has grown from a few hundred boys in 1907 to over 60,000 in 1911. This work has been carried on by the County Superintendents of Education through the schools of the county, with the assistance of the United States Department of Agriculture. The work is never a success without the proper co-operation on the part of the business men of the county, who contribute prizes for the encouragement of the boys.

As a County Superintendent and Corn Club Organizer I have always found it of supreme importance to bring to our assistance the business men of the county, the Farmers' Union, commercial clubs, school teachers, and preachers.

The first step is for the County Superintendent of Public Instruction to wake up to the great importance of better agricultural methods for his people, and what this awakening in turn will mean to the real prosperity of his county, and what a larger production of all crops will lend toward more efficient schools, good roads, attractive homes and every agency that means a more inviting country life.

One of the first things to be undertaken by the County Superintendent is to appoint a committee to assist him in securing prizes for the work. These prizes should be about as follows:

\$25.00 for the best acre grown in the county; \$15.00 for second; \$10.00 for third; \$5.00 for fourth.

\$15.00 for the best ten ears; \$10.00 for second; \$5.00 for third; \$4.00 for fourth; \$3.00 for fifth.

\$10.00 for best written report of the growing of the acre; \$5.00 for second; \$3.00 for third; \$2.00 for fourth; \$1.00 for fifth.

The best acre of corn should be scored as follows: 30% for largest yield; 30% for the best showing of profit; 20% for the best ten ears; 20% for the best written history of the crop. The yield and measurement should be certified to by two reliable disinterested men of the community.

I find the business men always ready to offer these prizes when the work is properly explained to them. After the prizes are secured, give the matter sufficient publicity to arouse interest and enroll the boys in the club. No boy's name should be accepted unless he shows interest to give a reasonable amount of time, and will cultivate his acre according to instructions, which will be mailed him from Washington. He will receive several bulletins of the fundamental principles of farming, seed selection, etc. He will also be furnished with a form for keeping his record of how the crop was made, and expenses. This record will show how many acres worked according to demonstration instructions, the kind and depth of soil, the subsoil, what crop was grown on the land on the previous year. The date and depth the land was broke, condition of land at time of planting, date of planting, variety of seed, width of rows, stand—good, medium or poor. How many times cultivated; the yield per acre in bushels; average yield of nearby land by ordinary cultivation and other interesting points, and he is also encouraged to keep the daily record of crop.

Estimate the land at \$5.00 per acre, time at ten cents per hour. Count all commercial fertilizers at actual cost and home-made manures at \$2.00 for a two-horse load. The boy should keep a close record of rent of land, cost of seed, planting, manure, fertilizer, cultivation and gathering.

After the organization is well under way it is usually a splendid plan to have a meeting of all boys, teachers and inter-

ested people of the county for a general agricultural educational rally, where the boys are given instructions and inspiration to endeavor to do the best work. The good results of this work are too numerous to mention in so short a period of time, but in every county where instructions are carried out, the proper attention given, the boys have demonstrated to the farmers and business men that the average yield of every acre could not only be doubled but trebled by the proper application of the fundamentals of good farming—as deep fall plowing and the preparation of the seed bed; judicious use of manure and fertilizers; the planting of field selected seed; rapid and intensive cultivation. The boy not only gains instructions by the Bulletins, but they learn to do, by doing, and putting into practice the scientific principles of good farming.

This work affords a simple and easy method for the teachers in the rural schools to stimulate a greater interest in the study of agriculture. When a boy knows how to grow a good acre of corn he has the working knowledge of farming. I am pleased to quote the results of some of the demonstrations in Henry County, Tennessee, a typical county for the Corn Club work. For the first year, this work has been carried on by Supt. Joe Routon, assisted by V. S. Bright, of the Grove Agricultural High School.

Name.	Address.	Yield per acre in bushels.	Cost per bushel.	Net profit per bushel.
Frank Upchurch.....	Buchanan.....	105.3	38	14.6
H. A. Newport.....	Puryear.....	100.8	23½	30
Hurvey Hancock.....	Puryear.....	86.6	18½	30
Earl Newport.....	Puryear.....	85.3	39	17.5
Dorsey Rigbsby.....	Henry.....	79.6	29	19.1
Claudius Huddleston..	Whitlock.....	77.1	38	14.6
Green Giles.....	Paris.....	75.4	50	14
Dial Shell.....	Paris.....	80	35	19.7
Dudley Hurt.....	Paris.....	84	52	13.5
Guqua Routon.....	Routon.....	70.1	29	19.1

Supts. J. L. Allford, of Hardeman County, and D. K. Donnell, Fayette County, have accomplished excellent results during the past year. The low average produced in their counties

presents a splendid field for this movement. Each of them told the amazing thing of the boys' work—"when other corn was suffering from the drought in the early spring the boys' plats stood out and grew right along without firing."

We feel that in this work, of teaching the young how to become better farmers, how that thrift and independence go hand in hand, that we are doing a work of service that will in time be unequalled from the point of statemanship in the awakening of rural life of the State.

We feel that if a boy does this one thing well that we have contributed to a type of character building, and that when the boy looks over the results of the whole year's work and sees his splendid achievement, he has a vision in his soul for a better day. He has the contrast of a poor acre of land that he has abused by ignorance and indifference, with a splendid acre brought up by mixing skill and intelligence with the soil.

Many questions in regard to farming were asked by members of the audience, which were promptly answered.

With Mr. Early were two boys, Barney Thomas, of Lake Carmen, and Norman Smith, of Covington, prize winners in the Corn Club contest. Both of them made short speeches to the Convention, stating the way they won the prizes.

Two other boys, John Van McKibben and Howard Smith, of Culleoka, second prize winners in the contest, were introduced by Mr. Early and told briefly how they became second prize winners.

Mr. Early then showed to the audience a check for \$100 from ex-Governor Robt. L. Taylor for the boy who has the most profitable acre of corn land in Tennessee.

Brief speeches were made by members of the audience in regard to the achievements of the boys.

Prof. C. A. Mooers, of the University of Tennessee, delivered an address on "Selecting Corn for Seed and Show." Many in-

teresting facts were brought out in his address, which consisted chiefly of information about the different varieties of corn. He also gave a display of the best grades of corn which could be most profitably raised in Middle Tennessee. He was asked numerous questions and gave some valuable information.

PREPARATION AND FERTILIZATION OF SOILS FOR LARGE YIELDS.

Prof. H. A. Morgan, of the University of Tennessee, delivered the following address:

The rainfall of the South is one of its greatest agricultural assets. The surface foot of soil will weigh per acre from 1,750 to 2,000 tons. During the year, in the South, this receives some 5,000 to 6,000 tons of rain water. Were this amount conserved and used in the production of a corn crop the yield per acre would quadruple that now obtained, and the corn belt of America would be transplanted at once to the area of greatest rainfall. The blessing of increased yield is not the only one to be gotten from retaining moisture. Shorter season for growth, improved varieties, double cropping, ample time for seed-bed preparation and weed destruction, a greater variety of crops, and a lightening of the cost of production, all share in the results to be obtained.

Practically double seasons is another of the South's assets. Shallow plowing and failure to grow crops during the winter primarily for green manure until our lands are quadrupled in their power to retain moisture, are largely responsible for depleted soils and gulied fields. The failure to improve our opportunities has been destroying us.

The story of why we have not more live stock for the manufacture of the waste roughage of our lands into manure is too long to be given here. The value of farmyard manure is known to us all. It works like magic, but we have not one load where one thousand could be profitably used.

In the absence of sufficient farmyard manure, green manures are our dependence. What shall they be? Even weeds,

before going to seed, may be enlisted. But it is better to systematize a work so important than to seize upon the accidental when presented.

Deep plowing and green manures are companions in the business of permanently building soils, and they are so recognized in this article. Another companion in soil building is the large mule or horse. 600 to 900-pound work animals, single or double, are enemies to the soil's possibilities, and it is gratifying to see larger sires and brood mares of quality being introduced and encouraged in the Southern States for the production of mules.

Initial deep tillage on average Southern soils cannot be accomplished without cost, and hence the results should be as lasting as possible. Subsoils average very low in vegetable matter. Subsoiling, as usually practiced, is, consequently, not permanent, but temporary. It is expensive work not half-finished. The real value of subsoiling, whether done by deep-rooted plants or an implement, lies not only in increased yields of one or two succeeding crops, but also in the opportunity of turning the land at the next plowing as deep as the previous subsoiling. Just here is where the green manure crop is most opportune—something that will compensate for the expense of deep plowing and produce permanent results.

The area to be improved by deep plowing and green manuring will depend upon the size of the farm and the equipment. The work should not interfere with the general operations of the farm, but be a part of them. When fall plowing is engaged in, and the subsoiler planned to follow in the furrow, a green manure crop should be sown. The crop to be used will be determined largely by the season. When July or early August plowing and subsoiling is done, crimson clover, a legume of unusual merit, will find a place. For later seedings, oats, barley, wheat, or rye, with hairy vetch, may be used.

Fertilizers, particularly phosphates, to encourage the growth of the cover and green manure crop, are of great advantage at this point. They multiply in effect when used on a green manure crop. The following spring, when the green crop is turned under as deep as the previous subsoiling, is when the value of the subsoiler is seen most. 12 to 14 inches is not too deep for permanent

results. Deep plowing and a green crop turned under are companions in the work of permanently uplifting a worn-out soil. Winter rains have been collected, and vegetable matter in the form of plant roots added, all to make good for the next crop, while the bulk of the green crop turned under is adjusting itself for the future well-being of the soil. The modern deep tillage machine may or may not eliminate the subsoiling. Where it can be employed in the turning under of a crop either in the fall or spring, results are assured.

After the deep-plowing under of a green manure crop, liming, with crushed limestone (carbonate of lime) or burnt lime, is most advantageous as a top-dressing. But the subject of liming will be discussed at some future time.

Whether to use green manure in the fall or spring is often a question. We are here reminded of a farmer's reason for permitting wild onions to grow on his place. He said it was the only crop that he and his neighbors were willing to turn under. There are two reasons why spring green manuring are suggested. First, the cover crop for winter utilizes the 12 per cent, or more, of heat units of the year as well as saving the land from washing; and second, there is usually sufficient moisture during the winter for the growing crop and enough to spare in the soil to prevent the temporary harmful conditions which sometimes result from the turning under of a green crop in the fall when a prolonged spell of dry weather prevails. Legume crops are oftener available in the fall for green manures, but they are also in demand for the winter's supply of protein in balancing our too common wide rations for dairy, beef and work animals.

Crimson clover can be produced in the South in ample quantities for green manuring, and with proper encouragement, by early sowing on well-prepared lands, limed and phosphated, may be grown without the question of inoculation being so burdensome. Oats along the coasts of the South, and wheat and barley in the northern tier of Southern States, can be produced in larger quantities per acre, and hence cheaper, than rye; and when, in the future, the seed for green manures are raised upon the farms and not bought, oats, wheat, and barley will likely supplant rye as a cereal green manure for the spring. Fortunately, hairy vetch combines with these grains, and may be harvested, threshed

and sown with them as a cover and green manure crop, and with cheapened seed should be sown freely, so as to predominate over the cereals, which are unable to gather the valuable element, nitrogen, from the air, whereas vetch is a legume which will add materially to the soil supply of this most important element.

One of the best indications of the progress of agriculture is the radical change in the point of view of the average landowner with reference to his soil. He thinks and talks restoration of soil fertility. His inquiries are directed more toward soil building and the profits in future increased yields. He is learning that diversity of crop and farm activity have an intimate relation to soil fertility. That to make a soil rich more than the application of commercial fertilizers is needed. That water stored up by deep tillage and green manures is an important factor in producing variety and yields of crops. That lime makes possible the more profitable production of many common legumes as well as the introduction of nitrogen gatherers even better than the ones we already possess. All this has come about through direct or indirect knowledge of soils naturally fertile or made so by the intelligent application of materials wanting in unproductive ones.

The difference, according to authorities, between the lime content of a poor and a rich soil is greater than that with other minerals or nitrogen. According to Bulletin No. 78 of the Tennessee Station, page 54, rich lands contain 3 per cent lime, while the poor soils contain 3.100 per cent lime. Judging from the analyses of soils made from the various soil areas of Tennessee no soil type contains enough lime to be called permanently productive. What is true of Tennessee is also true practically of all the soil types of the South.

Lime more than any substance affects the various agencies for soil betterment. The physical condition, the growth and storage of vegetable matter, the mineral elements, the bacteria, the air and water. Most soils contain lime sufficient for plant food, but entirely inadequate amounts for the aid of the other factors which are necessary in the permanent improvement of lands.

For the farmer the alfalfa test is a better one than litmus paper for lime. Outside of the alluvial deposits of the Mississippi River and tributaries and a few favored limestone areas of

the South, alfalfa is in no sense a safe crop without the application of liberal amounts of lime. Clovers, soy beans, cowpeas and many of the cultivated grasses indicate upon most Southern soils a need of this substance. In most of the experiments conducted on Tennessee soils limed areas highly fertilized with commercial plant food and farm yard manure in contrast with the same fertilizers and manure not limed, the difference in character of the growth and yields is convincing.

Without green manures, rotations involving clover and grass meadows and those methods of soil improvement now well in the possession of every thinking and reading farmer, lime may not prove permanently beneficial.

Two common sources of lime are available: the carbonate form (crushed or ground rock, lime meal, lime rock screenings, etc., and the burnt lime. The latter has long been in use, but since the burnt rock returns to the carbonate form before it is available for land, some may say, Why not use the crushed rock or meal?

One ton of burnt lime on returning to the carbonate form will be equal to practically two tons of the ground or crushed rock. In having to haul by wagon long distances, either from kiln or depot, other things being equal, the burnt lime will be more economical. The lower cost of ground rock at the quarry, 50 cents to \$1.50 per ton, and the better freight rate, favors the use of much larger amounts of the ground limestone or meal. The ground rock is more conveniently handled and with less injury to operators and stock. The finer the rock is crushed the more expensive, and since that as coarse as wheat or even larger has a large percentage of flour or dust in it, the advantage is much in favor of the coarser grades. There is less trouble in case of wet weather.

Two tons of meal or crushed rock or one ton of burnt lime per acre applied every few years will be sufficient for average crops, but for alfalfa twice these amounts will be better. Larger applications where lime is cheaper and near at hand are recommended.

Lime is best when worked into the surface of land. Where heavy applications are made a part may be plowed under and

part worked into the surface after plowing. Time and convenience in putting on lime will determine the season of application. If cowpeas, soy beans or velvet beans are to be planted on the land the lime may well be worked into the surface before planting. If alfalfa, clovers or grasses are to be sown in the late summer or early fall, lime should be applied from a few days to a few weeks before seeding. And if the clover or grasses are to be sown on the wheat or other winter grain land in the late winter or early spring, the lime should be applied before sowing the grain in the fall.

Burnt lime is best applied with a lime spreader, but it can be thrown on the land in small heaps, slaked with moist earth and spread with shovels. The spreader is best for distributing the crushed or ground limestone, but it may be handled pretty well with shovels. Two or three men spread it from the wagon body as they would manure, except very much thinner. The manure spreader may also be used if a layer of manure is put in the bottom of the bed.

EVENING SESSION.

The evening session was called to order by Mr. Frank D. Fuller, Acting Chairman, who made a few preliminary remarks, exhibiting two silver loving cups, given by the Agricultural Committee of the Nashville Board of Trade, one to go to the boy of the Corn Club who had on exhibition the best ten ears of corn of any variety, and the other to the man who had on exhibition the best ten ears of corn. He announced that the judges would meet at 7:00 o'clock, Wednesday morning, to decide the winners of the cups.

The first feature of the evening program was a lecture by Prof. Thos. H. Early, which was illustrated by stereopticon views. Along with a number of Corn Club winners over the State other interesting slides were thrown on the canvas which were explained by Prof. Early. Several slides in regard to making the farm life more attractive were shown, and some timely suggestions were made.

"BACK-TO-THE-FARM" MOVEMENT.

Chas. C. Gilbert, Assistant Secretary of the Nashville Board of Trade, was introduced to the audience and made an address as follows:

I come not before you to-night, Mr. Chairman, as a specialist to tell the farmers of Tennessee how they shall plant and cultivate in order that their yield may be greater, neither do I come as an expert on any given subject to impart knowledge and information which will add to the successful cultivation of the farms in Tennessee, but I am here to tell, as best I can—to talk to you in a plain, simple way—about a subject in which every farmer in Tennessee should be interested.

Back to the Farm movement. We hear so much these days about going back to the farm. The news columns, the editorial pages of our daily and weekly press are filled with suggestions as to how to get the people to go back to the farms. How to stop the great trend of city centralization. How to keep our farmers where they are.

When this subject is considered in all of its relations with our every day life, it is certainly a very important one. The stage of our prosperity is reckoned at the general condition of our farmers—if they are prosperous, if the farmers of the country have had a successful year, then the financial condition of the country is good, so, my friends, then you hold the key to the financial situation of the country, and if by word or deed, something can be done to assist the farmer, then the whole country is benefited.

There is one phase of the farmer's cost of production which I want to discuss, and by discussing it, desire to show the farmers of Tennessee where millions have been lost, and are still being lost. It is in the cost of transportation, the cost of hauling the yield of the farm to the market place. This particular item of cost is seldom considered by the farmer, because he owns his team, his wagon and he usually drives it himself and he can see no visible expense, when in reality this one item, by actual calculations, is one of the greatest to be considered.

The remedy for it is improved roads, and it is to this important subject I wish to address myself, and when the problem of better road conditions is solved, then will the cry "Back to the Farm" cease. Where there is a first-class macadamized road leading from the farm to the nearest town, that farm will be an attractive place to live and there will be no desire to leave the farm for the city.

I have nothing but the best compliments for the farmers of Tennessee who have made this State what it is from an agricultural standpoint.

No other State in the Union can claim the soil and climate with which Tennessee is blessed. This is by no means a one-crop State, but here every crop grows with profit. Corn, cotton, potatoes, tobacco, oats, wheat and hundreds of small crops are grown to better advantage than in the surrounding States, and the one thing yet needful to make this the most magnificent State in the Union, is a better road system. Let me ask your attention long enough to give you a few statistics to show how much money is being wasted by the farmers in Tennessee each year.

For instance, some of the farm values in Tennessee for 1910 were as follows:

Crop.	Production.	Value.	Cost of hauling.	Saving.
Corn, bushels-----	96,348,000	\$53,955,000	\$5,395,000	\$2,697,774
Wheat, bushels-----	10,647,000	10,434,000	638,000	319,410
Oats, bushels-----	4,600,000	2,116,000	147,200	73,600
Potatoes, bushels---	2,400,000	1,560,000	158,400	79,200
Hay, tons-----	637,000	8,536,000	1,274,000	637,000
Tobacco, pounds----	64,600,000	5,426,000	71,000	35,530
Cotton, pounds-----	145,973,000	20,582,000	145,900	72,986
Total-----	-----	\$102,609,000	\$7,829,500	\$3,915,500

Think of it, over three million dollars could have been saved on these crops alone last year in Tennessee had we improved roads. Enough money absolutely lost to have built over one thousand miles of first-class roads.

Now to my subject. In order to get people to stay on the

farms, two conditions must be met. First, there must be a profit; second, there must be some pleasure attached to such living. I have endeavored to show how much greater profit can be made by saving in the cost of hauling the yield of the farm to the market place, or from the point of production to the point of consumption. Now as to the pleasure of farm life. There must be good roads from the farm to the market place; these roads must be in a good condition the entire year so that a trip can be made with comfort and pleasure. If Tennessee had to-day a network of improved roadways the farms lying idle, the wasteland all over the State, would be transformed into fields of wheat and corn and other crops. Millions and millions of dollars would find their way into the pockets of Tennesseans and the pleasure of farm life would be increased many fold.

I am talking to the young men, young men who dream dreams and see visions. I want them to see visions of good roads from county seat to county seat, from the farm to the nearest town. I want them to see visions of great highways leading all over Tennessee, where there will be easy access from one point to another. I want them to dream dreams of the old farm. I want them to divide the farm into small parcels of ground. I want them to dream of a life of ease and comfort which comes to the farmers of this State. This can all be done if we will give a little of our time and attention to building better roads. In going over this State recently, from one end to the other, I noticed that where good roads were found the farms presented a more prosperous appearance. Farm houses were well built, the barns and outhouses in good repair, fences were all good and substantial. The live stock looked better, the buggies and wagons were all painted. In fact, it was evident that the people were prosperous. While in those sections where the roads were bad, the opposite was true. It seems that the condition of the road has a great influence upon the man who lives nearby. Now, fellow Tennesseans, let's overcome that condition in Tennessee. During the coming year let's give more attention to road improvement.

My advice to you is that you issue bonds and build roads so that the pleasure of living on your farm will be increased

many fold. It won't cost much. Take, for instance, the issuance of \$150,000 in bonds. That's a pretty good sum to begin with. In order to take care of the interest, and a small sinking fund to pay these bonds, the man who is now assessed at \$1,000 would have to pay \$2.50 a year more; \$10,000, he would have to pay \$25.

Who of you would object to paying even more than \$25 if you could have a first-class road over which to market the yield of your farm and over which you could drive with pleasure the year round?

SECOND DAY—WEDNESDAY, DECEMBER 6, 1911.

MORNING SESSION.

President Warren called the Convention to order at 10:00 o'clock.

Invocation by Dr. R. Lin Cave, pastor of Woodland Street Christian Church, Nashville.

CONTAGIOUS DISEASES OF ANIMALS IN
TENNESSEE.

The President introduced Dr. Geo. R. White, State Live Stock Inspector, who addressed the Convention as follows:

I come before the members of this, the Middle Tennessee Farmers' Institute, in the capacity of State Live Stock Inspector, to discuss the subject which has been assigned me.

The function of my office is to stamp out and prevent the spread of contagious animal diseases already in the State, and to prevent diseased animals from other States coming into this State. The work is done largely through the co-operation of county boards of health, the railroads, the stockyards, and the stockmen themselves. It may be of interest at this juncture to give you a few figures as to the number and value of animals, taken from the preliminary report of the 1910 census.

	Number	Value
Cattle.....	994,941	\$20,654,743
Horses and Colts.....	349,145	39,257,892
Mules and Mule Colts.....	275,000	35,060,075
Asses and Burros.....	7,983	1,074,816
Swine.....	1,386,050	7,320,377
Sheep and Lambs.....	793,963	3,005,538
Goats and Kids.....	43,493	82,553
Bees (colonies).....	144,479	341,000

The above figures will convey a comprehensive idea of the value of the live stock over which the State live stock inspector has supervision as regards prevention and eradication of contagious diseases and transportation. We have conservatively estimated that the aggregate animal losses in Tennessee from all classes of animal diseases amount to \$10,000,000. The losses from contagious diseases amount to \$7,000,000. Of this amount over \$5,000,000 worth of domestic animals die from the ravages of preventive contagious diseases. It is this \$5,000,000 worth of animals which the agricultural department of Tennessee is striving so hard and earnestly to save.

I feel sure of my ground when I state to you that with proper co-operation from the animal owners, the county authorities, the public stock-yards, and the railroads, we can save you not less than \$4,000,000 each and every year at a cost to the State of less than \$6,000.

In discussing a few of the contagious diseases which are now more or less prevalent in Tennessee, I shall as far as possible dispense with medical and semi-medical terms.

PREVENTABLE DISEASES.

The work of control and suppression of contagious and infectious animal diseases is a work of conservation of the health of animals, which is in the end conservation of the wealth of the live stock raiser and agriculturist of Tennessee. The eradication of the several deadly contagious and infectious diseases is conservation, in the broadest acception of the term. The protection of the health of the young or even the mature animals is protection in its most far-reaching sense. In protecting our own flocks and herds we are contributing our proportionate share toward protecting those of other and adjoining States. There is nothing more aggravating or disappointing to the well-meaning and progressive farmer of to-day than to have those animals which have been carefully raised to maturity carried off at almost lightning speed by the ravages of our now prevalent contagious or infectious diseases. What makes such a state of affairs more aggravating than otherwise is the fact that nine-tenths of all deaths from these various out-

breaks are preventable if the owners only knew what to do and when to do it. The old saying that "an ounce of prevention is worth a pound of cure" applies here more forcibly than anywhere else in the whole realm of science. The ravages of preventable animal diseases make annual inroads into the pocket books of the Tennessee farmer and stockmen. It is to his interest from an economic viewpoint to stamp out or suppress and control the spread of all contagious and infectious animal diseases, to say nothing of the far-reaching effects of such work in protecting the public health from those dangerous animal diseases which are transmissible indirectly from animal to man through the medium of meat and milk.

TEXAS FEVER.

Texas fever is a disease of much importance in Tennessee at this time. Its ravages have been the direct cause of several million dollars loss to the cattle-raising industry of our State, to say nothing of the many millions of dollars which have been indirectly lost on account of its presence. Eleven counties in Tennessee remain yet in quarantine, in spite of the incessant and systematic tick eradication work which has been going on in this State for the past six years by the State and county authorities in co-operation with the Federal government. Work of tick eradication is now being conducted in six of the eleven counties. In five counties no work is being attempted, as the county authorities have signified an unwillingness to undertake the trouble and expense incident to tick eradication. Now is the opportune time to begin work in all of the five heavily tick-infected counties if the cattle raisers in these counties could only be made to realize it. The tick can be destroyed now with less expense than later. The stockmen of the remaining counties can now profit by the experience of those who have already successfully conducted the work in the counties which have been freed of ticks and placed above the quarantine line. They have at hand the twentieth century method, the ideal way of killing ticks, viz.: the concrete dipping vat and arsenical solution, which are the boon to and the salvation of the cattle raising industry in the Southern States.

The dipping vat and arsenical solution are cheap and efficient as well as practical, and are in my opinion, the only weapons which will be used in the future in tick eradication work.

In many sections of Tennessee the cattle tick is the most serious obstacle to the successful live stock raising and dairying. The speedy destruction of the tick is, therefore, much to be desired. Officials of the United States Agricultural Department, State Commissioners of Agriculture, and live stock experts in our agricultural colleges advise that the surest and quickest way to get rid of the tick is by dipping cattle in properly prepared arsenical solution, and that if all cattle on a farm, be it large or small, are regularly dipped once every two weeks for a period of a few months, all of the ticks on that farm will be destroyed. Since 1905, 139,821 square miles of territory—an area more than three times the area of Mississippi—has been freed from ticks.

BOVINE TUBERCULOSIS.

Tennessee has been one of the last States to undertake the work of exterminating or eradicating bovine tuberculosis. However, in my opinion she will be the first State in the Union to boast of its complete eradication.

The Agricultural Department of Tennessee has now in operation a compulsory tuberculin test order, which provides that all dairy cows in Tennessee supplying milk for human consumption shall be submitted to the tuberculin test. Reports are coming into my office showing more than 300 cows are being tested every day. At this rate bovine tuberculosis will be a disease of the past in this State before many months. On an average of three per cent of the cows tested are reacting to the tuberculin test. These reactors are being appraised and paid for by the various counties in which they are found.

By eradicating bovine tuberculosis we are accomplishing a great work, from an economical as well as a public health viewpoint. Since bovine tuberculosis is a contagious disease, the twentieth century dairyman cannot afford to have a tubercular cow in his herd, as one diseased cow now may mean ten, twenty, or thirty diseased ones twelve, eighteen or twenty-

four months from now. The dairymen's slogan should be: "Get rid of tuberculosis now."

In order to provide for a uniform and reliable method of treating, the following order was promulgated.

WHEREAS, it has been brought to the notice of this Department that tuberculin testing of dairy cows is being done in a haphazard, unreliable and irregular manner, by several veterinarians in Tennessee;

And, whereas, the Ophthalmo and Cutaneous methods of using tuberculin are experimental, unreliable and misleading,

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby order

SECTION 1. That the following shall constitute the minimum requirements for a tuberculin test which will be recognized by this Department.

(a) At least two (2) temperature readings, three (3) hours apart shall be made before injection of tuberculin.

(b) The subcutaneous injection of the required amount of any fresh tuberculin, made by either the Federal Government or any reliable manufacturer of Biological products.

(c) At least three (3) temperature readings on the 12th, 15th and 18th hours after the injection of the tuberculin must be made.

SEC. 2. Veterinarians making the tuberculin test in Tennessee shall fill out in triplicate a temperature chart on official blanks, which will be furnished upon application to this Department; one copy to be sent to the City Health Officer, one copy to the County Health Officer, and one copy to the State Live Stock Inspector.

SEC. 3. No Ophthalmo, Cutaneous, nor any other "freak test" will be recognized by this Department

SEC. 4. Veterinarians making the tuberculin test in Tennessee shall brand all reacting animals with the letter "T" on right jaw. The brand letter shall be at least three and one-half ($3\frac{1}{2}$) inches high, and the impression (with branding iron red hot) shall be made clear and distinct. Said veterinarian shall within twenty-four hours report all branded reacting animals to the County Health Officer of the County in which said animals are found. The County Health Officer shall notify the County Live Stock Inspector, who shall immediately visit the farm or premises and isolate and place in temporary quarantine all branded, reacting animals, and said animals shall be kept under official supervision until they are disposed of according to law, by appraisement and slaughter.

HOG CHOLERA.

Of all animal diseases now prevalent in Tennessee, hog cholera causes by far the greatest financial losses. It is prevalent at almost all seasons of the year in most every county in Tennessee. Its control and suppression is a problem from which we, as State authorities, shudder. As yet we have not seen our way clear to undertake hog cholera eradication work. Possibly, later, some future general assembly may make the necessary appropriation to stamp out this deadly and widespread scourge to the swine-raising industry. At present all we can do is to advise the swine raisers to use the Dorsett-Niles hog cholera serum freely, at their own expense. State aid is out of the question at the present time. Whenever we can get an appropriation sufficiently large to establish, equip and maintain a hog cholera serum laboratory I will feel justified in undertaking the direction of hog cholera eradication work. The free use of hog cholera serum is the method by which we hope to stamp out hog cholera.

Recently the hog cholera situation became so acute that we felt justified in issuing the following order:

WHEREAS, the fact has been determined by the Commissioner of Agriculture and State Live Stock

Inspector, and notice is hereby given that all *public* stock yards in Tennessee are infected with hog cholera and other contagious and infectious swine diseases; and,

WHEREAS, the movement of swine from any public stock yards in this State for "breeding," "stock" or "feeding purpose," or for any other purpose other than immediate slaughter, is a constant menace to the swine-raising industry of Tennessee; and,

WHEREAS, the swine-growing interests demand that proper steps be taken to prevent the further spread of hog cholera and other contagious and infectious swine diseases from said infected public stock yards,

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do hereby order:

SECTION 1. That all public stock yards in the State are hereby placed in quarantine—as regards the handling of swine—and all persons, firms and corporations are prohibited from removing swine therefrom for any purpose other than immediate slaughter.

BLACK LEG.

Black leg has been recently reported in many counties in Tennessee and, while the annual losses from this disease are considerable, they are not as great by thousands of dollars as they were before the advent of black leg vaccine. Many cattle owners have become accustomed to the routine of vaccinating all the cattle on their premises under three years of age, thereby avoiding loss from this fatal, though easily preventable disease. Reliable black leg vaccine is easily available and within the reach of all. Its administration by use of the modern vaccine injectors is so simple that even a small boy or ordinary farm hand can do the injecting quite satisfactorily. If a Tennessee farmer loses any large number of cattle from black leg it is his own fault. Carelessness can be his only excuse.

SHEEP SCABIES.

Five years ago not a case of sheep scab was to be found within the confines of Tennessee. When the market price of sheep was at what is known as the "high water mark", several enterprising and money-thirsty individuals imported or brought into the State without inspection, quarantine restrictions or official supervision, hundreds, and possibly thousands of Western sheep for stockers and feeders. Many of these sheep came from badly scab-infested Western and North Western States. The sheep themselves in many instances were "scabby," thereby introducing scab into our own scab-free native flocks. After its introduction the scab carriers were allowed to move to different parts of the State for several years without quarantine restraint, until now we have sheep scabies in no less than eleven of the best sheep-raising counties in Middle Tennessee. In Williamson County alone more than 8,000 cases of scab have been found out of only 17,500 sheep inspected. Its eradication involves great expense, not only to the counties where it exists, but to the State and Federal government as well. We have the problem of sheep scab eradication work well in hand, and were extremely fortunate in securing the co-operation of the Federal government, who sent Dr. Lawton, a well trained and experienced United States veterinary inspector, from South Dakota, to Tennessee to assist us in this work. Two additional Federal government inspectors have already arrived to assist us in stamping out sheep scab. These, with the county live stock inspectors and State men, will make rapid inroads on the sheep scab mite during the next twelve or eighteen months, at which time we hope to again declare Tennessee free from the sheep scab.

There are many other contagious and infectious animal diseases present in Tennessee at this time, such as actinomycosis, cowpox, cerebro-spinal meningitis, canine distemper, influenza, mycotic stomatitis, and hydrophobia. However, I do not consider this an opportune place or time to discuss them at any great length. Suffice it to say that as the occasion demands we will take what steps we consider right and proper to protect the herds and flocks from their ravages.

I had hoped to have an opportunity of saying a few words in regard to diseases caused by intestinal and other parasites; also something in reference to plant poisons. However, I have already taken up more time than I had expected, and I am compelled to defer remarks on poison plants and parasitic diseases. In conclusion, allow me to say that the advantage of Tennessee as a live stock raising center are legion. I will only call attention to our ideal climate conditions, abundant water supply, long grazing seasons, and favorable conditions for growing and maturing all of the more important forage crops, to say nothing of our accessibility to market, etc. In the capacity of State Live Stock Inspector I certainly have a fertile field for action. In this most laudable work of control and suppression of contagious and infectious animal diseases we desire to solicit the hearty co-operation and support of all good citizens. In return for your co-operation we promise you our best efforts in stamping out every contagious disease to which Tennessee live stock is heir.

Mr. Atwell Thompson, of Jackson, was to have addressed the Convention on the "Memphis-to-Bristol Highway," but could not be present on account of illness.

MEMPHIS-TO-BRISTOL HIGHWAY.

President Warren introduced Mr. James Palmer, who spoke as follows:

It is a great pleasure and honor to have the privilege of addressing a great audience, such as I have before me to-day, especially upon a subject which is of such vital importance to us all. I will not attempt to tell you any of the details of road building, but tell you something of the Memphis-to-Bristol Highway, its object, and purpose.

Its purpose is to furnish a safe and sane path of communication by which transportation of the products of the country can be reduced to the lowest possible cost. It means the development of a highway by which it is possible to add to the comforts of human life by making social communications

easier, by making it possible to accomplish greater results in transportation in a shorter period of time, and with less fatigue than otherwise possible, and again by changing conditions of living from a life of drudgery to one of ease and comfort.

If there is a farmer in this country who is not prospering it is because the profit of his labor is lost between the farm and the railroad by having poor roads. It is said there is a piece of road in Tennessee over which a farmer started to town with a load of hay, the roads being so bad that the mules ate the hay up before he got to town. I suspect that there are many such pieces of road in Tennessee at the present time.

Now, I will briefly tell you of the organization of the Memphis-to-Bristol Highway and its duties. A commission of eleven was appointed by a good roads convention held in Nashville, five to represent the territory from Memphis to Nashville and five to represent from Nashville to Bristol, and one from Davidson County to be the Chairman of the Commission. Its first duty was to inspect the different routes suggested and select the best. To that end the Commission of five representing East Tennessee, with its Chairman, and a government engineer, known as the pathfinders, left Nashville in two automobiles on its mission to inspect East Tennessee routes.

We left Nashville on the morning of June 20, via the Lebanon turnpike, passing through the City of Lebanon, Gordonsville, Carthage, Cookeville, Monterey, Crossville, Rockwood, Kingston to Knoxville. In all of these places we were met by large delegations of good roads enthusiasts and many speeches were made in the interest of the highway. There is no section of the country where more beautiful scenery can be seen than in crossing Cumberland Mountain in an automobile, also there are many things along the old Walton Trail connected with the early history of Tennessee, notably the Craborchard Inn, where General Jackson spent much time while passing. At Knoxville we were met by delegations from Morristown, Greeneville, Jonesboro, Johnson City, and in all of these places we received a royal welcome. At Greeneville we saw the little tailor shop, also the monument erected in memory of Andrew Johnson. At Jonesboro, we made our speeches in the same Court House where the great men of Tennessee made theirs

in the long ago. At Johnson City we visited the Soldiers' Home and many other points of interest. In Carter County, we saw the beautiful Appalachian Mountain, also we passed the monument erected on the spot where the immortal seven hundred Tennesseans assembled to go forth to do battle at Kings Mountain. Elizabethton, the county seat, is a beautiful little city, and we spent a pleasant hour there mingling with the citizens and talking good roads. At Bristol we received an enthusiastic welcome and were entertained by the Board of Trade.

We started on our return journey on the north side of the State, via Blountville, Kingsport, Rogersville, Tate Springs, Knoxville, Clinton, Oliver Springs, Harriman, Crossville, Sparta, McMinnville, Woodbury, Murfreesboro and to Nashville. In all of these places we met large delegations of citizens enthusiastic about the Memphis-to-Bristol Highway; many speeches were made by men prominent in every walk of life.

On July 3, the Commission for West Tennessee, together with the Chairman and an engineer left Nashville to inspect the various routes through that section. We went out Franklin Pike via Spring Hill, Columbia, Mt. Pleasant, Lawrenceburg, Waynesboro, Clifton, Decaturville, Parsons, Lexington, Jackson, Brownsville, Memphis, returning via Somerville, Jackson, Huntingdon, Camden, Waverly, Dickson, White Bluff, Nashville. We then inspected the central route via the Hillsboro Road, Leipers Fork, Little Lot, Centreville, Linden and Perryville. West Tennessee is rich in history and rich in everything pertaining to agriculture. The people are enthusiastic about good roads, especially the Memphis-to-Bristol Highway.

The pathfinders spent altogether four weeks in the automobiles in familiarizing themselves with the various routes. The result of this trip has been to sign up a string of counties, from Memphis to Bristol, agreeing to build this highway across their county in connection with adjoining counties. This work is well under way and will be carried to successful completion in the near future.

DAIRYING.

Mr. J. H. McLain, of the United States Department of Agriculture, was next introduced and spoke as follows:

Dairying is needed in Tennessee not only to stop the large streams of money that are yearly being sent out of the State for the various dairy products, but for the more important question of soil fertility. The dairy cow with her manure helps to solve this great problem as a side line, and as a main line gives ready money from the sale of her products with which to build up and maintain the farm otherwise.

A cow produces fourteen tons of solid and liquid manure yearly, a ton of which contains 8.6 lbs. of nitrogen, 5.8 lbs. of phosphoric acid and 8.8 lbs. of potash, which at 20 cents per lb. for nitrogen and 5 cents each for phosphoric acid and potash is worth \$240.00 for plant food. It is true that all of this manure is not saved, but consider that wheat straw contains 9.6 lbs. of nitrogen, 4.4 lbs. phosphoric, and 16.4 lbs. potash, per ton, and at the above prices for these ingredients are worth \$296.00, and forest leaves contain 15 lbs. nitrogen, 3.2 lbs. phosphoric acid and 6 lbs. potash per ton and are worth \$346.00. Say one half the value is preserved and a liberal quantity of either straw or leaves is added as bedding for the cows, you see the loss will be more than made up. Think what this amount of manure per cow means to poor land.

In this connection consider that every ton of pea-nut hay sold from the farm removes \$7.96 worth of fertility, a ton of cotton seed \$18.80, 50 bushels of corn per acre, \$9.36 and 35 bushels of oats per acre \$11.33. 80-90 per cent of this fertility can be returned to the land if the crops are fed to dairy cows and the manure carefully preserved. The cotton seed meal used as a fertilizer could be run through these cows and still 80 per cent of its value be added to the land. Now I realize that every farmer can't be a dairyman, and that every one who can, can't be a dairyman exclusively, nor is this desirable; but I do believe that every farmer who possibly can should keep enough dairy cows on his farm to consume the rampage of the farm from the manural standpoint if from no other.

The cow leads all farm animals in her power to convert feed crops into human food. For every 100 lbs. of digestible matter she consumes, she returns 139 lbs. of milk; the hog returns 25 lbs. of dressed pork for an equal amount; and the steer 83 lbs. of dressed beef. So much for this side of the cow.

Dairying, as carried on in Tennessee, is not as profitable as it should be, due to several causes, every one of which can be remedied or removed by the farmer.

Poor cows are the curse of the dairy industry and their existence is due to either the carelessness or negligence of their owners. The average production of the cows of the United States is about 3,000 lbs. of milk and 150 lbs. of butter fat. 25 per cent of these cows do not pay for their board, and 25 per cent just break even, so you see only 50 per cent is left for profit making. No dairyman should be satisfied to keep cows that do not average 6,000 lbs. milk or from 250 to 300 lbs. of butter fat. Any dairyman who has been keeping cows six or eight years and has not this average has fallen short of his possibilities and has lost profit that might have been obtained. An average of 1,003 Southern cows produced 4,212 lbs. milk and 213.46 lbs. butter fat. The average of the 10 best gave 8,641.8 lbs. milk and 465.33 lbs. butter fat, while the average of the 10 poorest gave only 905.8 lbs. milk and 41.74 lbs. butter fat. Don't smile, for among this number are some Tennessee cows. There's no excuse for poor cows. The remedy is simple and inexpensive. Record sheets, scales, and Babcock tester and their intelligent use will solve the problem. Daily weights of milk from individual cows with monthly fat tests and approximate weights of feed will separate the profitable from the unprofitable, the good from the bad, and this record work is the only way on earth that these separations can be intelligently made. If you are not doing this work to find out the cost and profit of each cow in your herd you are neglecting one of the fundamental principles of successful dairying and are robbing yourself of profit. Take an example of what a Georgia dairyman accomplished by two years of this work. He raised the average production of his herd 257 lbs. milk and 33.66 lbs. butter fat, and the average profit per cow \$16.90. Does it pay? Ask common sense.

By breeding the herd with a pure bred bull of some special dairy breed, one whose ancestors for generations back have been good producers, and saving the heifer calves from the best cows, which have been proven the best by the record work, the average productions of the herd can be rapidly raised. You can't be too careful in the selection of this bull. Have only the best regardless of price.

With these inherent bad cows, comes the farmer's bad feeding methods. Cotton seed meal and hulls form a standard ration in many localities. Such a ration is not only unproductive to the best profit, but injurious to the cow. No farmer can feed as profitably as he should unless he raises the majority of his feed. Raising feed is fundamental. A cow needs a variety of good, digestible, nutritious food to do her best work. In other words, a balanced ration, which, generally speaking, is simply a combination of different feed elements in the proportion best suited to the needs of the cow. Roughly speaking, just giving her meat and bread according to the work she is doing. Cows of large production should be given more than cows giving less. This applies to grain feed. They should have all the rampage they will eat up clean. The feeding problem in Tennessee is not a hard one, for almost every thing for a good ration can be grown on the farm. Pea vine hay, clover hay, soy beans, corn stalks, and silage can be grown in abundance and give a variety of rampage unexcelled.

Silage is one of the greatest of feeds. Every farmer who has as many as ten head of cattle, beef or dairy, should have a silo, and furthermore, he is not feeding them as profitably as he should unless he has. Think of this, one acre of blue grass pasture will carry a cow about six months, and one acre of silage corn, producing ten tons, will carry her about one and one-half years. Silage can be raised for from \$150 to \$2.50 per ton delivered into the silo ready for feeding. The silo can be built with farm labor for from \$1.50 per ton capacity for wood, to \$2.35 per ton for concrete. You cannot afford to be without a silo.

Another source of loss to the dairyman is the bad quality of product he puts on the market. This morning's paper quoted Northern creamery butter at 38½ cents per lb., and native

butter at 20 cents. The difference in quality is largely responsible for this discrimination and it is the dairyman's own fault. The production of good milk and butter is no patent secret. Any farmer with care, cleanly methods and the observance of a few principles can make a fancy product. Expensive and elaborate equipment is not required, as some suppose.

Dairy work is regarded by some as drudgery and I'll admit that on many farms with their filthy lots, dark, dirty barns, and lack of conveniences for handling milk and washing the utensils, that it is. These are not necessary on any farm. Cows can be systematically arranged with gutters for catching the manure, light admitted, lots drained or covered with gravel and inexpensive apparatus obtained for washing utensils and handling milk on any farm. These things will do much to eliminate drudgery, but above all good profitable cows, that give profit enough to make improvements with, and some to spare, will do more to eliminate drudgery than any other one thing.

Over production in dairy products need not be feared. The ten years ending 1910 showed that the human population had increased 20.7 per cent, while the cow population increased only 20.3 per cent. There is only one cow to every 4.2 people. And again if cows are so bred that they will give more and more milk, and the feed for them raised on land which increases its yield every year, milk will be produced cheaper and cheaper. Take the average production of 3,000 lbs. milk and 150 lbs. butter fat and compare it with the world's record of over 27,000 lbs. milk and nearly 1,000 lbs. butter fat. There is vast possibilities between these figures for the average dairyman.

Dairying is an intelligent line of work and requires hard work and intelligent work; but for these it returns handsome profits. There is no attraction in dairying for those who do not want to study and work.

In discussing the few points made I have not gone into details for lack of time, but you can obtain these by writing to your Agricultural College, or the Dairy Division of the Department of Agriculture at Washington, D. C. Think over these things.

PRIZES AWARDED.

After a few remarks by Frank D. Fuller, the presentation of the men's cup was made, the judges having decided that T. L. Huffman of Normandy, Bedford County, had the most perfect ten ears of corn, it being of the Huffman variety. The reserve champion in the men's department was Gil T. Buford, of Pulaski, Giles County.

The presentation speech was made by T. Garland Tinsley, representing the Agricultural Committee of the Nashville Board of Trade, as follows:

Mr. Chairman, Gentlemen and Members of the Boys' Corn Clubs:

Last spring the Board of Trade of Nashville, realizing what was being done in other States for the agricultural interests of those States, appointed from its membership an Agricultural Committee to take up the subject and lend such aid as was practiced. The committee has co-operated with the Department of Agriculture, the State Fair and like associations and a report was made by it last spring, pointing out what was being done in other States in the way of agricultural experiments and demonstrations, agricultural trains, scientific tests, etc., with the recommendation that more interest should be taken in intensive agriculture by the farmers of Tennessee.

It gives me great pleasure to be present at such an enthusiastic meeting of the Boys' Corn Clubs. It means much for the future of agriculture in Tennessee. It is the awakening to the opportunities and possibilities of what the farmers of Tennessee can produce. Great developments await your efforts; large yields per acre have been secured from the so-called poor lands of North Carolina, South Carolina and Georgia, but the rich soil of Tennessee has never been subjected to the scientific methods followed in other States. When this is done, you can be assured that no State can compete with Tennessee in the raising of any crop that is grown in the South.

Last year, in Georgia, Boys' Corn Clubs were organized in ninety-six counties, with a membership of 7,000 or 8,000

boys. Some of these boys wore knee breeches and were so small they could scarcely handle a plow or pull it from under the roots of a stump, yet the average yield per acre secured by these boys was six times greater than the average for the State.

In North Carolina Corn Clubs have been organized in seventy-five counties, with an average yield of fifty-eight bushels to the acre, the highest yield being 146 bushels. This shows what boys are doing in other States, and we should be able to do even better.

When we consider the small amount of educational work done the past spring in Tennessee we have reason to be proud of the results shown here to-day. The successes achieved by the Boys' Corn Clubs in our State are attracting much attention. No doubt there are many instances of very large yields, but the ones that have particularly come to my attention are those obtained by young Mr. McKibben, of Maury County, 16 years of age, who produced 167 bushels to an acre, at a cost of \$47.50, making a profit of \$51.71 an acre. Another instance is that of Mr. Bennie Morris, of Montgomery County, who produced 151 bushels per acre at a cost of \$31.80, showing a profit of \$51.07. This shows what can be done by Tennessee boys. The highest reported yield of the North Carolina Boys' Corn Club was 146 bushels per acre.

Now, let us see what assistance and opportunity for education the Tennessee boy has had in his work as compared with the opportunities in this field offered the boys of the Carolinas and Georgia.

South Carolina spends yearly one-quarter of a million dollars for its Agricultural College and other agricultural work. The State appropriates \$3,000 each year for corn breeding and \$500 for farmers engaged in cereal contests.

Georgia spends for her Agricultural Department, State College demonstration work, etc., \$125,000 per annum; North Carolina, \$165,000 per annum; Tennessee from \$40,000 to \$50,000, so you see how poorly our legislators have provided for the Department of Agriculture and the Tennessee Experiment Station. With this comparison before us it behooves

every citizen to join in the movement to educate the public of the great possibilities of agriculture in Tennessee and to help in every way possible to increase our agricultural appropriations. We need large sums of money for the work, and, I am sure, the business interests of the State will lend every assistance. The Nashville Board of Trade will be very glad to exert its best efforts in a cause so vital to the prosperity of the State.

I am sure that all of us present will agree that our agricultural interests are entitled to a more liberal appropriation. The young men of the State are eager for information and are anxious to avail themselves of the opportunity to witness demonstrations by the State. The result of such interest are shown in our attendance and displays to-day. Will the State do its part? It is, to put it in street language, "up to you," young men here, to talk it over with your fathers and insist on your representatives giving you equal opportunities with the boys in other States. You are entitled to it. You are paying a tax of 50 cents a ton on each ton of fertilizer you buy, which is five times the amount paid in Georgia. Why not get the benefit of this taxation in the shape of demonstration farms, expert teachers and lecturers, prizes, etc.?

The South has just commenced to realize that it can compete with any portion of the United States in raising corn, and it can be done on a profitable basis. In recent years, Southern men have won many prizes against Western growers. At Madison Square Garden, New York, on November 11, of this year, a farmer from Virginia won the \$1,000 silver cup for the best thirty ears of corn, and he won this over exhibitors representing all sections of the country, including the exhibit of L. D. Close, the famous Indian Corn King, heretofore undefeated in a contest of this nature. A year or two ago, a young man from Virginia won the silver cup at the Kansas City Corn Show for the best ears of corn exhibited, competing against the best corn breeders of the West. The last-named Virginia exhibitor had availed himself of a course at the Virginia Agricultural College, and, returning to a farm in a very poor section of the State, applied the scientific methods he learned at the Agricultural College, with the result named. The wonderful and unequalled yield

of 225 bushels of corn to an acre was made on a North Carolina farm that eight years before cost \$10 dollars an acre.

I am confident great benefit and interest will accrue to the farmers all over the State from the exhibits here to-day and we can all look forward to even better results next year, as well as more participants in the exhibits.

There is no Southern State so favored as Tennessee. Not only has it a fertile soil capable of producing any crop that is grown south of the Ohio and Potomac and east of the Mississippi Rivers, but, above all, it possesses rich phosphate deposits, from which many tons are shipped each year to enrich other States. This phosphate rock is used in supplying available phosphoric acid, the best known source of plant food, consisting of about 70 per cent of the plant food contained in every ton of commercial fertilizer. Of course, some goods are all phosphoric acid.

No State possesses such opportunities for the farmers as Tennessee. What we need is more education, more agricultural demonstrations, more money from the State for agricultural work, and it should be forthcoming at the next meeting of the Legislature. Each one present should lend his aid to that end.

Young men, the future of agriculture in Tennessee rests with you. The State must look to you for its future progress in this, the most important feature of our existence, and for its guidance in all things that are for its development and betterment.

Mr. Huffman briefly responded to the calls for a speech. He said he had spent a lifetime in creating the Huffman corn and he believed it was the best corn on earth. He said this species of corn had been in his family for sixty years.

The trophy bears the following inscription:

"Awarded to T. L. Huffman by the Agricultural Committee of the Board of Trade, Nashville Winter Corn Show, 1911. Championship Cup, Men's Section."

Adjournment for lunch was then taken.

AFTERNOON SESSION.

The Convention was called to order by President Warren at 1:30 o'clock.

The first address of the afternoon was by Col. Robert Gates, land and industrial agent of the L. & N. Railroad. Although Col. Gates was present he was not able to deliver the address and it was read by Carey Folk, as follows:

FARMERS, THE CONSERVATIVE FORCE IN THE BODY POLITIC.

Mr. President and Gentlemen of the Farmers' Institute:

In presenting this paper to the Institute, I desire to say, by way of preface, that it contains my personal views as a citizen of the Republic.

I want to say further, that I am a friend of Capital and Labor both, but seeing the evil, as well as the good, possible in the organization of each, I appeal to the conservative force in American politics, the farming class, to hold the balance of power evenly and patriotically between them, in order that the greatest good and the least evil may result from the activities of both.

Thinking over the matter, and paraphrasing the utterance of a distinguished English Governor of India on an historic occasion, I might add: "When I reflect on how much I might have said, I am astonished with my own moderation" in dealing with the facts and possibilities involved.

The world holds in its bosom many unrevealed, if not unrevealable secrets. We have the story of the rocks, the story of the fossils, and the story of the ruins of prehistoric civilizations, opening a wide field for speculation and imagination, but we know little or nothing of the causes which produce them.

Within the historic period, it is different. We read the monuments and ruins, the hieroglyphics and picture writings of the dawn period of human history, with fair accuracy. In the monument and hieroglyphic writings of Egypt and Assyria, we read the causes of the collapse of the Egypto-Assyrian civilization.

The causes that brought about the most stupendous catastrophe in all history—the fall of the Roman Empire—carrying with it the splendid Greco-Roman civilization, are, in the main, fairly clear.

Greed and graft, producing luxury and licentiousness and poverty; political ambition and demagoguery, producing corruption, demoralization and strife—these were the primal causes of the awful collapse of Egypt and Assyria, Greece and Rome.

There was no conservative force in the body politic to wield the balance of power for the good of society. Capital and labor, in one form or another, fought to a finish, and the finish was chaos, there being no force in either civilization to say to selfish oppression and reckless resentment—"So far and no further"—to stay the tide that engulfed the East in a common ruin.

Our civilization—we may style it the European-American Civilization—did not spring fully equipped from the ashes of Rome, but slowly grew from seed saved, through the darkness and turmoil of a long period of ignorance, superstition, restless migrations and the crusades, from chronic war and horrible persecutions, slowly, for ages, until the light penetrated and relieved the darkness that mantled the mass of mankind, then by leaps and bounds until this splendid day.

But the same primal causes that wrecked the early civilizations, still remain to vex and threaten. Capital and labor are still at war, and have been, time out of mind, and will be so long as selfishness matches, or overmatches, patriotism and the golden rule in the government of men.

The chief instrument employed by greed and demagoguery throughout history, is taxation, and it may be asserted with reasonable confidence, that no equitable system of taxation has prevailed at any time in any place. Even the *ad valorem* system, which exists more or less in Europe and America, exists more in theory than in practice. Favoritism, discriminations, and exemptions, thread every system yet devised. This is especially true in this country, despite the loud boast of equal rights to all, and special privileges to none.

Taxation is the most vital power of government. It promotes, retards, or destroys. It holds the power of life or death

over material things, thus affecting the whole social system, and will be a menace to the broader prosperity of the country and its political safety so long as the people support or tolerate systems of indirect taxation.

That capital has abused its power in this connection, is undeniable. That it has taken advantage of its opportunities to tax the people for its own benefit, and dictate prices of labor, raw material, and finished goods, will not be denied.

The Trusts are grievous sinners—so grievous that the Government has taken them in hand; and they are being regulated by law, and prosecuted for violations of the law in both Federal and State Courts. We may expect at least the more glaring evils of trust and corporate power generally to be eliminated. Judging from the present tendencies, State and National, there seems to be more danger in excessive legislation and prosecutions than there is in too little.

This tendency is making for socialism a theory that is making long strides in Europe, and is insidiously at work in this country, and which, in the last analysis, means government ownership of all property and a universal tenant system.

In this connection, and in the last third of a century, there has grown up in Europe and America a new political and industrial force—*Organized Labor*. This force has become potential in political and commercial life. At first defensive, it has grown bold with numbers and organization, and to-day there is no more aggressive power in the body politic of Europe and America. They use with effect the revolutionary weapons of the strike and the boycott, and are relied on by socialistic leaders to clear the way for socialism per se.

In some of the nations of Europe, and all the States of America, organized labor has capital on the defensive. It has legislative boards and lobbyists in Washington, and every State capitol. It is meeting capital on its chosen fields, and is not only assertive, but dictatorial. It holds over political parties and Congresses and State legislatures, and city councils, the vote of organized labor, which its leaders wield at will. It has attacked the courts, and demands restrictive procedure that amounts to special privilege.

It brings pressure to bear on public men, and affords opportunities to reckless demagogues second to no other influence in politics. It embraces nearly every class of employes, from the man with the spade and the pick, to the skilled laborer—in a word, every man or woman that works for wages. It will yet include the farm laborer, the man with the hoe and the plow.

The right of labor to organize is not questioned. The necessity of organization is admitted. Greed, graft and special privileges have created conditions that made it inevitable. But I submit if it does not look like the time may come, if it has not already come, when it will be necessary to deal regulatively with organized labor, State and National, somewhat along the lines of State and National regulation of corporations.

Certainly the time has come for grave and critical study of labor demands and methods, as well as watching and regulating corporations and trusts.

We should understand that the conflict between capital and labor is worldwide, and as old as human effort to better conditions. It is simply inevitable in the nature of things. The increasing bitterness of the conflict is alarming. In Europe, where conditions are intensified by class distinctions and assumptions, bloody revolutions are threatened that will imperil the very foundation of civilization.

Recent events in France, England and Germany, especially the two former, are frightful warnings of more frightful possibilities, and in this land of resources and great opportunities, there are warning disturbances which are on the increase in numbers and bitterness, and lawlessness.

In an address to a large body of farmers in 1890, at Germantown, near Memphis, on the spirit of organization then abroad in the land, I argued that the movement for organization would become general until all avocations were embraced; that this would be accomplished through strife and loss, and deploring of much bitter and dangerous economic and social seed. But I indulged the hope then, that when all avocations were organized on selfish lines, and their representatives met in halls of legislation, face to face, each seeking special legislation, that the abounding fact that the real good of each, the enduring good, was the good of all, and conservatism and co-operation would result.

I confess that this hope is not as strong now as it was then. The antagonism between organized labor and organized capital is so sharp, that each is growing blind to the wisdom of conservatism and co-operation, and seems madly bent on destroying the very source of prosperity.

Both are driving, through Government regulation, to Government ownership—first of railroads, then of mines and manufacturing, and last, of the land itself. Between them, they are undermining the home, the nursery of patriotism, statesmen and soldiers; the fountain of morality and order; foundation of Christian civilization.

Whither will the patriot turn for hope of the Republic—the greatest, fairest offspring of time?

Upon the *farmers* of the land, as a body, rests this weighty responsibility. Conservative by virtue of their calling, equally interested in the good of all classes of citizens, in capital and labor alike; removed by their environment and independence from the influences that inspire class prejudice, with most to lose and least to gain by disorder, they constitute the conservative force in the body politic of the Republic.

Had the older civilizations such a body, there might have been no wrecks and nights, but more or less steady progress through the long ages. Europe would be comparatively safe now if it had such a body in the sense that it exists in this country.

In this land of opportunity there is no one blessing comparable to the farming class. As a body, they hold the balance of power between all parties, factions, and classes, and can hold it indefinitely and save the Republic; save representative government, a government for the people and by the people, with checks and balances to safeguard liberty with order.

To fill this great position and mission, the farmers should avoid entangling alliances—of being the cat-paw for selfish interests. Especially beware of any sort of alliance with organizations that resort to, or encourage, in any way, lawless methods to accomplish ends; that for persuasion and argument substitute the bludgeon and dynamite; that would permit none to the field of effort, except those with collars of some order about their necks; or that would, through special legislation, acquire the

power to dictate and oppress the masses of the people. These are the beaten highways that lead through anarchy and chaos to despotism.

It will be a sad day for the Republic when the farming class, or any considerable body of farmers, ally themselves with organizations seeking special and selfish legislation of any kind.

It is your mission to see that justice is done all legitimate interests—to hold the scales fairly and prevent over-reaching by any class or avocation.

Selfish interests, appreciating your power, are seeking, and will seek, by specious pleadings and honied words, and fallacious promises, to use you; but true patriots in every class and of every interest, look to you as the conservative intelligence to guide the ship of state through storm lashed seas, safely and gloriously.

LIVE STOCK INDUSTRY IN TENNESSEE.

Following Col. Gates on the program was an address by W. Gettys, of Athens, on the "Live Stock Industry in Tennessee." On account of the absence of Mr. Gettys, the subject was taken up and handled in a very able manner by J. A. Jackson, who said in part:

"The cattle tick causes much indifference in regard to cattle raising in Tennessee and in the South and this will continue until the tick is completely eradicated. Some of the farmers over the State have freed their cattle and their sections of ticks and also demonstrated to their neighbors how it was done. When this is done all over the State the interest in cattle raising will be greatly increased. Among the so-called immune herds three per cent of the cattle die of the tick fever. The railroads and other corporations have begun to give their aid to tick eradication and the farmers of the State should co-operate in getting rid of this deadly parasite. Excellent results have been had in the thirty-two counties where the eradication of ticks has been attempted and at the present rate they will be completely stamped out of the State in the course of a few years."

MEMPHIS-TO-BRISTOL HIGHWAY.

Jere Whitson, of Cookeville, Putnam County, State Agent of the Good Roads Commission, gave an able address in regard to the Memphis-to-Bristol Highway.

In part, Mr. Whitson said:

In regard to the Memphis-to-Bristol Highway, I think I have a fairly good idea about building good roads, and I daresay every man in the audience would like to have good roads in his County, his State, in the South and in the entire Nation. There is no one question of greater importance to the farmers than good roads and they should be more interested than anyone else. There is no way to build the roads but to pay for them, and it is going to take money. In my home county bonds were voted and the money secured in this manner, and why wouldn't that be practicable here?

There is one phase of this subject which many of you have never heard discussed, and that is having the convicts of the State penitentiary to build the roads. Ask the business man of any county in the State and see what they tell you in this respect. Suppose we were working our convicts here in this State and were building an average of twenty miles of macadam roads every year in every county. Can you think of a better or cheaper way to have the roads built? Experienced men say it is the best plan. I know all about the work at the penitentiary and there are some conditions that exist that could be gotten rid of by working the convicts in the building of good roads. This is the solution of the good roads problem in Tennessee. The majority of the people favor convict labor on the roads, and you should instruct your representatives in the legislature to that effect. We are just beginning on the good roads work. Senator Robert L. Taylor introduced a bill in Congress for convict labor to be used in this respect and the government should assist in the work. Agitation in Tennessee has done more for the proposed Memphis-to-Bristol Highway than anything else, and the enthusiasm is spreading over the State.

FARM DEMONSTRATION.

Hon. H. D. Tate, of Washington, was the next speaker of the afternoon, addressing the audience upon the subject, "Farm Demonstration." Mr. Tate is in charge of the Farm Demonstration Work of the United States Department of Agriculture, Bureau of Plant Industry.

In part he said:

We have depleted the fertility of the soil of our farms. Fifty years ago the leading thinkers of that time saw where they were drifting and were cognizant of the fact that the resources on which they were living could not last forever. We of the day know that the national wealth of the country is rapidly being used up. The government is putting up these experiment stations to enable the farmer to make better crops and make the soil more fertile. Although bulletins containing valuable information are sent out to the farmers of Tennessee during the year, very little attention is paid them, and but little benefit has been derived on that score. The experiment stations that have been put up at the various places have been sources of great good to the farmers in those sections. Much has been learned. Demonstration farms are being placed over the State by the government, and at present a number of them are in Middle Tennessee. J. M. Dean, of Columbia, is in charge of the Middle Tennessee section of the work. Although the farms are practically a new thing in this section, the farmers, where they are situated, are enthusiastic over them, and realize that much can be learned if the proper time and attention is given.

POULTRY INDUSTRY IN TENNESSEE.

J. A. Dinwiddie, of New Market, was then introduced and addressed the audience on the "Poultry Industry in Tennessee."

Mr. President, Ladies, and Fellow Farmers:

The three principles of first importance in the improvement of Tennessee poultry are good hens; good, natural, congenial sur-

roundings, feeds and feeding. By good hens, I mean hens that have an inborn tendency to lay—strong and vigorous and able to stand this strain and demand on their system. Hens, as we usually find on our Tennessee farms, are inbred and crossbred too much—in other words, allowed to breed too much on their own intelligence, and in a hit-or-miss fashion.

It is of just as much importance that we breed our farm poultry on definite and scientific principles as any other live stock. Keep, by all means, pure bred poultry, the breed you particularly like, and the breed that conforms to the market you wish to cater to. If you want eggs, keep the Leghorns or Mediterranean breeds. If you want meat keep the large breeds, such as the Orpingtons, Brahmas; and if there is a dual purpose breed of poultry, you will find same in the Plymouth Rocks, Reds, and Wyandottes. Don't be cranky as to breed, and waste your time and feed on a breed that doesn't conform to the market you wish to cater to.

One of the best and cheapest ways to build up our farm flocks is to either buy and head these flocks with pure bred male birds of our choice breed; or buy eggs and hatch and raise these birds; or, again, buy a small pen of pure bred stock and year by year we can build these flocks.

Natural, congenial surroundings mean only to give our birds range, house-room, or home environments that make the hen happy and contented, not being tormented to death with lice on their bodies, and other parasites, and their houses free from drafts so they can have a comfortable place to sleep.

Feeds and Feeding. Poultry, like other live stock on our farms, are living machines to take in raw foods and manufacture the desired finished product. Then our rations must conform to the egg and meat analysis. A hen will consume from 90 to 100 pounds of food per year, and it is every farmer's part and interest to aid nature by supplying the hen with such foods, compounded into a ration, as will produce the desired product.

36 pounds cracked corn, with fine meal sifted out, mixed with 24 pounds wheat, makes up a good grain ration per year for a hen, with 12 pounds wheat bran, 12 pounds beef scraps or meat meal, and 6 pounds alfalfa meal as a ground ration, this ground mix-

ture being fed dry, in hoppers. This formula will furnish one hen food in the right proportions, and in sufficient amount for one year, at a cost of \$1.50. This is not the very best ration, perhaps, but one that can be made up on all Tennessee farms, as these grains are available on all farms of this state. The beef scraps and alfalfa meal can be supplied and perhaps not needed where plenty of milk by-products can be had, and if we have plenty of range so birds can get green grass the alfalfa meal can be left out. This ration is my own, that I have tried and found O. K., but I have also found that the best foods will not make hens lay if they are not given good home environments, and are not a good, vigorous strain of pure bred stock, or a well bred mongrel flock.

Likewise with young chickens; we need to know the essentials to grow, feed and rear to maturity a strong, vigorous chick, as this furnishes our next year's breeders and layers. Keep them free from disease, and keep them growing. In case of lice, and we nearly always have a few, here is a tried, cheap remedy: three parts gasoline and one part crude carbolic acid, mixed with enough plaster of Paris to absorb the mixture of liquid. This will get them and is cheap. Keep dry and from the air. In case of gapes, fumigate with carbolic acid fumes. Diarrhœa can be somewhat controlled by lime water drink, boiled milk drink, change of food. But of course prevention is always best. I don't want any one to go daffy on the poultry business, but I do want the Tennessee farmer to give the farm hen an equal chance with other farm live stock. And also it requires the same intelligence but no more, and for your trouble and pains, you will find no live stock that can go by the hen for profit. Thank you very kindly for your attention.

LOVING CUP AWARDED.

Judge Robert Ewing was introduced and presented on the part of the Agricultural Committee of the Board of Trade a beautiful silver loving cup to Bernard Huffman, who won the championship prize for the best ten ears of corn raised by a boy.

In presenting the trophy, Judge Ewing, after giving a history of the Boys' Corn Club movement, said:

I am sure, my dear young friend, that to present to you this beautiful cup gives me far more pleasure than its receipt can possibly give you, for you, in raising these ten ears of corn, have realized a dream I have cherished for ten years. I have worked hard to bring this about. I have accomplished but little, but you have accomplished much, for you have taught in the proper way a lesson to the older people of the State, which they will not willingly let die. You have begun right and have succeeded, but let me beg of you to not be content with this. Regard it as just a beginning and go forward the rest of your life, showing what the soil of your State can be made to produce. This year the premiums are small, but next year the Agricultural Committee of the Board of Trade and the State Fair will see to it that prizes offered are something worth striving for. I want you to resolve right now to come off victor in that greater contest next year, but whether you do or not, keep this cup as evidence that thus early in your life you have accomplished a great thing. Take this cup from the Agricultural Committee of the Board of Trade, with our best wishes for your future success.

WINTER CORN SHOW AWARDS.

Class I.—Best ten ears corn, any variety or color, exhibited by West Tennessee Corn Club boy:

1st, \$25; Loucas Puckett, Dresden, Tenn.

2d, \$15; Edward Parks, Somerville, Tenn.

3d, \$10; Ed. Craig Burns, Pulaski, Tenn.

There were 10 entries in this class.

Class II.—Best ten ears corn, any variety or color, exhibited by Middle Tennessee Corn Club boy:

1st, \$25; Bernard Huffman, Normandy, Tenn.

2d, \$15; Guy Chunn, Shelbyville, Tenn.

3d, \$10; Ed. Craig Burns, Pulaski, Tenn.

There were 101 entries in this class.

Class III.—Best ten ears corn, any variety or color, exhibited by East Tennessee Corn Club boy:

- 1st, \$25; Zeb T. Sanders, Persia, Tenn.
- 2d, \$15; Harold Duncan, Cleveland, Tenn.
- 3d, \$10; Carl Bell, Greeneville, Tenn.

There were 11 entries in this class.

Class IV.—Best ten ears single-eared variety white corn, exhibited from State-at-large by Corn Club boy:

- 1st, \$15; Bernard Huffman, Normandy, Tenn.
- 2d, \$10; Guy Chunn, Shelbyville, Tenn.
- 3d, \$7; Ed. Craig Burns, Pulaski, Tenn.
- 4th, \$5; Zeb T. Sanders, Persia, Tenn.
- 5th, \$3; Loucas Puckett, Dresden, Tenn.
- 6th, \$2; Harold Duncan, Cleveland, Tenn.
- 7th, \$1; Carl Bell, Greeneville, Tenn.
- 8th, \$1; Donald Campbell, Lynnville, Tenn.
- 9th, \$1; Chas. Young, Lebanon, Tenn.

There were 78 entries in this class.

Class V.—Best ten ears yellow, red or strawberry corn exhibited from State-at-large by Corn Club boy:

- 1st, \$15; Roy Park, Pulaski, Tenn.
- 2d, \$10; Norman Smith, Covington, Tenn.
- 3d, \$7; Frank Perkins, Hartsville, Tenn.
- 4th, \$5; Jim Perkins, Hartsville, Tenn.
- 5th, \$3; Thomas Hager, Belmont, Tenn.
- 6th, \$2; Guy Bishop, Burns, Tenn.
- 7th, \$1; Aubrey Parks, Somerville, Tenn.
- 8th, \$1; No award.
- 9th, \$1; No award.

There were 15 entries in this class.

Class VI.—Best ten ears prolific corn—Batts, Cocke, Albe-marle, Mosby or other similar corn—Hickory King to be shown in this division. (On account of division in type between Hickory King and the Prolific Corn, the two classes were separated and the premium money divided as follows):

PROLIFIC.

- 1st (half), \$7.50; Chas. Julian, Cleveland, Tenn.
- 2d (half), \$5.00; Jno. B. Riser, Franklin, Tenn.
- 3d (half), \$3.50; A. P. Walker, Manchester, Tenn.
- 4th (half), \$2.50; Edward Parks, Somerville, Tenn.
- 5th (half), \$1.50; Roy Lutz, Cleveland, Tenn.
- 6th (half), \$1.00; Cal M. Ayre, Cleveland, Tenn.
- 7th, \$1.00; Lawrence Cecil, Cleveland, Tenn.
- 8th, \$1.00; Irby Koffman, Humboldt, Tenn.
- 9th, \$1.00; Aubrey Parks, Somerville, Tenn.

HICKORY KING.

- 1st (half), \$7.50; Jas. Campbell, Belmont, Tenn.
- 2d (half), \$5.00; Chas. W. Price, Lebanon, Tenn.
- 3d (half), \$3.50; Jno. F. Johnson, McDonald, Tenn.
- 4th (half), \$2.50; Dale Carter, McEwen, Tenn.
- 5th (half), \$1.50; E. Marshall, Sealand, Tenn.
- 6th (half), \$1.00; Willie McIntosh, Waverly, Tenn.
- 7th, \$1.00; Goodloe Warden, Manchester, Tenn.
- 8th, \$1.00; Orlen Sealand, Somerville, Tenn.
- 9th, \$1.00; No award.

There were twenty-two entries in this class.

Class VII.—Best display by a single County Club, not less than ten individual ten-ear displays:

- 1st, \$25; B. B. Ezell, Superintendent, Clarksville, Montgomery County, Tenn.
- 2d, \$15; Mrs. Kate L. Nichols, Superintendent, Trousdale County, Hartsville, Tenn.
- 3d, \$10; D. W. Duncan, Superintendent, Bradley County, Cleveland, Tenn.
- 4th, \$5; J. G. Warden, Superintendent, Coffee County, Manchester, Tenn.

Championship.—From State-at-large; cup, Bernard Huffman, Normandy, Tenn.

MEN'S SECTION.

Open to State-at-Large.

Class VIII.—Ten ears Huffman:

- 1st, \$5; T. L. Huffman, Normandy, Tenn.
- 2d, \$3; C. E. Frey, Clarksville, Tenn.
- 3d (half), \$1; W. I. Gresham, Murfreesboro, Tenn.
- 3d (half), \$1; Roy H. Holman, Clarksville, Tenn.

There were thirteen entries in this class.

Class IX.—Ten ears Boone or Johnson County type:

- 1st, \$5; Gil T. Buford, Pulaski, Tenn.
- 2d, \$3; Vance Davidson, Wartrace, Tenn.
- 3d, \$2; H. K. Morgan, Shelbyville, Tenn.

There were eight entries in this class.

Class X.—Ten ears Tennessee Red:

- 1st, \$5; D. C. Spivy, Gallatin, Tenn.
- 2d, \$3; A. M. Dement, Cortner, Tenn.
- 3d, \$2; Geo. Eleazer, Burns, Tenn.

There were seven entries in this class.

Class XI.—Ten ears Tennessee White:

- 1st, \$5; J. W. Scott, Gallatin, Tenn.
- 2d, \$3; A. M. Dement, Cortner, Tenn.
- 3d, \$2; Paul Seavy, Iron City, Tenn.

There were four entries in this class.

Class XII.—Ten ears Improved Watson:

- 1st, \$5; J. E. Reeder, Burns, Tenn.
- 2d, \$3; M. C. Webb, Shelbyville, Tenn.
- 3d, \$2; W. E. Chunn, Shelbyville, Tenn.

There were fourteen entries in this class.

Class XIII.—Ten ears Iowa Silver Mine:

- 1st, \$3; W. I. Gresham, Murfreesboro, Tenn.
- 2d, \$2; Henry Perkins, Hartsville, Tenn.
- 3d, \$1; Walter Blackman, Murfreesboro, Tenn.

There were five entries in this class.

Class XIV.—Ten ears Hickory King:

- 1st, \$3; J. E. Reeder, Burns, Tenn.
- 2d, \$2; A. N. Miller, Christiana, Tenn.
- 3d, \$1; George Eleazer, Burns, Tenn.

There were nine entries in this class.

Class XV.—Ten ears any variety of Prolific:

- 1st, \$5; Frank Bingham, Cleveland, Tenn.
- 2d, \$3; S. B. Brame, Clarksville, Tenn.
- 3d, \$2; C. S. Looney, Winchester, Tenn.

There were nine entries in this class.

Class XVI.—Ten ears Yellow Dent, Reid or Leaming types:

- 1st, \$5; C. E. Frey, Clarksville, Tenn.
- 2d, \$3; Frank Perkins, Hartsville, Tenn.
- 3d, \$2; Jim Perkins, Hartsville, Tenn.

There were five entries in this class.

Class XVII.—Ten ears Yellow Dent, other than Reid or Leaming types:

- 1st, \$3; A. J. Dickerson, Gallatin, Tenn.
- 2d, \$2; Bud Mitchener, Gallatin, Tenn.
- 3d, \$1; George Eleazer, Burns, Tenn.

There were five entries in this class.

Class XVIII.—Ten ears Red or Strawberry:

- 1st, \$3; C. S. Looney, Winchester, Tenn.
- 2d, \$2; J. H. Keene, Hartsville, Tenn.
- 3d, \$1; No award.

There were two entries in this class.

Class XIX.—Ten ears variety not listed above:

1st, \$3; J. W. Scott, Gallatin, Tenn.

2d, \$2; Y. M. Rizer, Franklin, Tenn.

3d, \$1; C. S. Looney, Winchester, Tenn.

There were seven entries in this class.

Championship Cup.—From State-at-large; T. L. Huffman, Normandy, Tenn.

The Convention then adjourned until 8 o'clock p. m.

EVENING SESSION.

Convention was called to order at 8:00 o'clock p. m., by President Warren.

Dr. George R. White, State Live Stock Inspector, delivered a lecture on "Meat and Milk Inspection." Stereopticon views showing different diseases of food-producing animals were exhibited and explained, and sanitary methods of preventing disease were discussed.

HEALTH AND SANITATION ON THE FARM.

Dr. Olin West, of the State Board of Health, in charge of the Hookworm Eradication Work, addressed the Convention as follows:

In appearing before you as a representative of the State Board of Health, I desire to thank the officers of this Association for the opportunity afforded to present to you some of the features of the work of the department which I represent and to tell you something of what we hope to accomplish for the welfare of our State.

The subject assigned me, Sanitation and Health, is a subject too large to be covered in the time allotted to-night, but I sincerely hope that I may be able to say something that will impress

you with the importance of the subject and to give you a few practical suggestions that will induce you to think carefully about what you can do, as individuals and as an organization, for the protection and improvement of the public health.

I suspect that none will gainsay the statement that a man's health is his most important asset. It is not possible for an individual to attain to greatest possible success in any line of endeavor without health. It matters not how fertile our fields nor how up-to-date the methods of cultivation, their best yield can not be obtained if those upon whose labor their yield depends are physically unfit. The material welfare of the individual farmer more than of any other citizen, is dependent upon his having good health, and the health of the great body of farmers is of greatest importance not only to them as a class, but to the whole citizenship of the State. The time at my disposal will not allow me to enlarge upon this point. Just as the health of the individual is the thing of greatest importance to him, so the health of the family, the community, the city, the State, the health of the nation, is the most important thing to each of those units. "Public health is public wealth."

The greatest loss which comes to us as a State, loss in dollars and cents, is that which comes as the result of illness and death from diseases that are largely preventable, and so it behooves us to consider what can be done to stop this loss. If we look at the matter from a purely mercenary standpoint of dollars and cents, with no thought for the suffering and woe which disease and death entail, it is worthy of most thoughtful consideration. Every death and every case of illness from preventable disease produces loss to the State. Human life has a definite money value. It has not been many years since able bodied slaves were sold in Tennessee at prices ranging from four hundred to two thousand dollars, and the basis of value was the health and strength of the slave. I do not think that any here would value his life at less than two thousand dollars, and if we accept this value of a human life, it will not be hard when we know how many lives are annually sacrificed to preventable disease, to compute the loss which Tennessee suffers from this cause. Every case of typhoid fever, a preventable disease, costs, at a fair estimate, two hundred dollars, and we have every year in Tennessee,

especially among our rural population, many cases of this disease.

Certain knowledge about a disease is necessary before we can classify it as a preventable disease. We must know its cause, how the cause gains entrance into the body, how it is transmitted from one to another, how its transmission may be prevented, and how we can get rid of that disease which already exists. This, in a general way, is what we must know of a disease before we can call it preventable, and those which are killing and incapacitating our people most are the diseases about which we have the necessary knowledge to make them largely or entirely preventable. What are some of them? Consumption, the great Captain of the Men of Death, the leader of the list, is, for the most part, preventable. And yet it kills its 200,000 citizens annually in our nation, more lives falling before it every year than before the guns of opposing forces in our wars. It is believed that seventy-five per cent of the cases of tuberculosis can be prevented. Typhoid fever, a strictly rural disease and the one, perhaps, most dreaded by our people, is a preventable disease, preventable by measures easy of application. It is spread as the result of practices the suppression of which it would seem ordinary decency would demand. Diphtheria, which has ruthlessly choked thousands of our children to death, is a preventable disease. Malaria, not very fatal, but prevalent and producing indisposition of a large part of our people for a large part of the time, is a preventable disease. Smallpox, which, to our shame, is still abroad in the State, is almost absolutely preventable. Several of the diseases of children are largely preventable. Hookworm disease, which appears to be the most prevalent disease in our Southern States, is a preventable disease. Infant mortality due to incorrect feeding and unclean food, can be largely reduced.

I know full well that there are those who doubt and scoff at these statements, but they are susceptible of proof. Suppose we take time to relate some of the triumphs of preventive medicine.

It has been determined that fifty million persons died in the Eighteenth Century from one disease, smallpox. Four hundred thousand deaths from smallpox occurred in Europe every year

in the pre-vaccination days, and authorities have reckoned that five-sixths of mankind were attacked by this loathsome disease. In the Kingdom of Prussia, in the early part of the Nineteenth Century, forty thousand deaths occurred annually from smallpox. Since the introduction of compulsory vaccination in 1874 the forty thousand annual deaths that old King William Frederick wrote about have been reduced to almost none, the death rate having been reduced by vaccination to 1.5 per hundred thousand. In the eight years immediately preceding the occupation of Havana by the American forces, 3,123 deaths were reported from smallpox; in 1899, one year after the entrance of the Americans and the institution of compulsory vaccination, there were four deaths from smallpox and only three in the next seven years. Prevention by the very simple procedure of vaccination effected this wonderful change.

Yellow fever, in the year 1793, in the short space of six and one-half weeks, killed one-tenth of the entire population of the great City of Philadelphia. On more than one occasion this fatal disease has brought failure to great expeditions, and great engineering enterprises have had to be abandoned because of the frightful mortality wrought by yellow fever among the working forces, resulting in tremendous financial loss as well as the loss of human life. The building of the Panama Canal had to be abandoned by France because of the havoc wrought by disease. After the experiments of Lazear, Carroll and Reed so clearly demonstrated the manner in which this dread disease was communicated to man, in which work these brave men laid down their lives that the world might know how this scourge could be prevented, Havana, which has always been recognized as the locus in which the fever was always present, reduced its mortality from 639 per 100,000 to 4.3 per 100,000 in the short space of two years. The development and prosperity of that wonderful island, Cuba, and of its neighbors, the completion of the greatest of all engineering undertakings, the Panama Canal, the future health and development of a part of our own Southland are assured by the noble sacrifice of these brave doctors. Their names should be written large in history, and if monuments were ever owed to the memory of men, the South should erect its tallest with these three names inscribed. It has

not been long since the western part of our State suffered a yearly exodus of its people and was under the necessity of maintaining expensive quarantine, which paralyzed commerce, because of yellow fever. And yet yellow fever is gone, gone because preventive medicine discovered the simple measures necessary to prevent.

Cholera, in comparatively recent years the most dreaded scourge of the Atlantic States, and which, indeed, swept over our own State within the memory of some of my hearers, has become a thing of the past because of the discovery of its cause and the application of well known and simple sanitary principles.

Scurvy, a disease which, in years past, fairly swept the armies and navies of the Old World off the face of the earth, has been almost entirely eliminated.

Typhus fever, which ravaged the civilized world for hundreds of years, is now a rare disease, almost unknown, except in those countries where sanitation has not advanced.

Diphtheria has lost much of its terror since its prevention has been rendered possible and almost certain where opportunity has been given to apply early the simple means for its prevention and cure.

And so I might relate other instances where preventive medicine has triumphed over disease, but these will suffice. If smallpox, with millions upon millions of victims to its credit can be rendered powerless to slay more, if yellow fever with the awful record it has made can be banished from lands where it has flourished for generations, if cholera which has filled numberless graves can be relegated to place in medical history where it is almost forgotten, if scurvy which decimated the forces of the most powerful nations on land and sea can be almost entirely eliminated, if typhus fever can be so controlled that it has no terror for the community where proper rules of sanitation are enforced, if diphtheria which has choked thousands of our children to death and has maimed thousands of others into conditions worse than death can be robbed of its awful terror, surely we can control to a marked extent the diseases which are now producing most of the loss of life in our State. We know more about them, in some instances, than about the diseases already conquered, and, while I have not time to enter into a

discussion of the measures necessary to prevail against the prevalence of specific diseases, I do want to call your attention to the fact that, in nearly every instance, these precautionary measures are simple and easy of application. I want to say, too, that in those States with efficient health laws and where the co-operation of the people is offered, consumption and typhoid fever are decreasing.

Investigation will show that the educational and industrial progress of nations is directly proportional to their advance in sanitation. Not only so, but in those countries where sanitary science and preventive medicine have made progress the longevity of the people has markedly increased. In Europe the average lifetime has doubled in three hundred and fifty years, while India has the same average that has obtained for hundreds of years. Take the nations of the world and study their history and present conditions, and you will find that their material progress and the length of life of their people can be measured by their advance in sanitation or by their lack. We believe, then, that in our own State the length of human life can be prolonged, and the prosperity of our land can be increased by the observation of the simple laws of sanitary living; and we believe that the obverse of this proposition is equally true.

The loss of our loved ones and the incapacity of individual members of our own families by sickness is not the only toll exacted of us by preventable disease. We pay taxes to maintain our schools and I say to you that an unreasonably large part of the moneys expended in our schools is wasted because so many children are not capable of receiving an education because of present disease and physical defects. We pay to maintain poor houses, all of which are occupied by unfortunates there because of preventable disease in themselves or in their parents before them. Taxes are paid to maintain criminal courts and jails where criminals are tried and confined; many of these criminals are criminals because of disease somewhere that could have been prevented. Mental diseases are increasing, and we pay taxes to house our insane, many of them insane because of preventable disease. We must support our institutions for the blind and deaf; blindness and deafness, in many cases, could have been prevented.

Permit me to relate the story of a prominent business man of Nashville, known to many of you here. At our last Legislature we were striving to have enacted a law providing for the medical inspection of school children, a law which would increase the health of the State and which would prevent or relieve physical infirmities that are going to interfere with the happy life of many of our future citizens. This man came to me and said, "Doctor, I want you to know that I want to do all that I can do to help you with the fight for the passage of that bill for medical inspection." I asked him the reasons for his interest and he told me this story: "Until I was about nine years of age, my parents thought that I was mentally deficient. They could not teach me to read, I could not be taught at school, and special teachers could not teach me to read. I would take little interest in things which ought to interest a child at my age. Pictures shown me had no charm for me. The only possession I had that gave me pleasure was a pony which I would mount, and with the bridle on his neck, allowing him to choose his own way, I was happy. Finally, a friend of my father suggested to him that it might be that there was some defect or disease which was responsible for my backwardness and suggested that I be carried to a physician. This was done and at last my father was referred to a physician making a specialty of treating diseases of the eye. There it was discovered that I could see not more than a few inches in front of my nose, and the cause of my retardation was explained. Right well do I remember the time when the glasses that had been ordered for me were put on and I was led out into the yard, where, for the first time in my life, I saw the leaves on the trees under which I had played always; and the individual blades of grass at my feet; and how, when it became dark that night, I was taken out and saw for the first time the stars in God's heaven." There was a boy who could not see the pages in a book, much less the printed letters; there was a boy entitled to education, to whom education was not possible until his physical defect was removed. But, you say, that is a very extreme case. Perhaps so, but let me call your attention to a statement which you will find in the last report of the State School for the Blind, in which it is said that in the two years covered by that report twenty persons had been sent to that in-

stitution so near blind that it was thought they must go to the Blind School for their training, who had been sent home within a few days seeing as well as you or I can see, because there they had the opportunity to have the simple measures applied which gave them sight. I submit that there are hundreds of children in our schools to-day whose education and development are retarded, to some degree, because of visual defects and defects of hearing. I know from personal observation that there are many, many children in our schools, devitalized and depressed, retarded in physical and mental development, because of hookworm disease. I say that your teachers, no matter how patient nor how competent, can not teach to the best advantage children with poor sight, poor hearing, with minds and bodies underdeveloped because of the devitalizing effects of disease.

I would that you could go, as I do, into many schools in Tennessee and see for yourselves as I see them the many children whose education is being interfered with or made impossible by preventable disease. Many instances have come under my observation and under the observation of those engaged with me in the campaign for the eradication of hookworm disease in the State of children who have "repeated" in their classes one year or two years because of hookworm disease. It would rejoice you to see the difference in these children after treatment, to see how they advance in their classes, to see how their minds brighten and their bodies grow.

Hookworm disease and typhoid fever are spread as the result of the same practice, the pollution of the soil by those harboring the parasites which cause these diseases. The State Board of Health is now having made a sanitary survey of the rural districts and it has been found, in those counties where this survey is complete, that considerably less than six per cent of our country homes and schools have any facilities to prevent the contamination of the soil and the consequent contamination of water and garden food supplies with disease producing germs. This is a deplorable condition of affairs and it is not to be wondered at that typhoid fever is prevalent and that carefully made infection surveys show from 20% to 73% of rural school children in some Tennessee counties to have hookworm disease.

The germs of typhoid fever and the parasites which cause

hookworm disease inhabit the same organs in the body, the intestines. The living typhoid germs and the eggs of the hookworm are passed out with the natural discharges from the bodies of those infected, and, if carelessly deposited upon the ground, may produce the infection in many other persons. It is possible for the careless disposal of the discharges from the body of a person sick with typhoid fever to produce an epidemic in a community. Many instances could be cited. It is possible for a single person having hookworm disease to furnish the infection to produce the disease in every child in a school. By the simple measure of building and enforcing the use of inexpensive sanitary closets in our homes and schools the prevalence of typhoid fever and hookworm disease would be materially reduced in a very short time. If, in addition to this, the careful disinfection of all discharges from the bodies of those sick with typhoid were practiced, and wells and springs were carefully protected from surface drainage, and wells and springs already contaminated were closed or no water used from them which had not been boiled before using, typhoid fever would soon become rare. If, after our homes and schools were properly supplied with sanitary facilities for preventing soil pollution, and the cases of the disease already existing should take thorough treatment for the cure of the disease we should soon be entirely rid of hookworm disease. It can be easily cured in nearly every instance.

The State Board of Health has at present five well equipped men in the field working for the eradication of hookworm disease and for the improvement of the unsanitary conditions that now exist in our rural homes and schools. They are making free microscopic examinations for the diagnosis of the disease, are distributing literature describing the disease and telling what is necessary for its prevention and cure, and are instructing the people about sanitation. Five county courts in the State have made appropriations for the conduct of free dispensaries for the treatment of the disease. Free microscopic examination will be made of any specimens sent to the office of the Board of Health from suspected cases of hookworm disease. Everything done for the suppression of hookworm disease is something done for the prevention of typhoid fever. The eradication of hook-

worm disease will help to reduce consumption. In one county, twenty consumptives were examined and seventeen of them were found to have hookworm disease. The parasites which cause this disease inhabit the most important part of the digestive tract, producing mechanical injury that seriously impairs digestion, and throwing out a poison which is absorbed and greatly impoverishes the blood. Now, given a person with impaired blood and impoverished digestion you have one who easily falls prey to any disease producing agent which may gain entrance into the body of that individual.

I wish time would permit me to tell you of families that I have seen in Tennessee reduced to poverty because of hookworm disease, how they have been changed from dependents into active producers by the taking of the simple treatment necessary to cure. I would like to tell you of children in some of our schools, how they have been changed from dullards and drones into bright, active children by the discovery that their mental and physical deficiencies were due to hookworm disease and by their then being treated for it. A child in the public school has a right to be protected from disease present in other children attending the school, and the guard of every child in the schools has a duty to perform in seeing that his child is not the subject of disease that might attack other children. You are certainly your brother's keeper in that it is your duty to see that no harm comes to him by reason of preventable disease in your bodies or in those under your control.

The State Board of Health is doing what it can with the means at its command to conserve the health of the people. The health of the people can best be conserved by the prevention of disease. This is the great purpose of public health organizations. Public health is a purchasable commodity. Proper facilities furnished the public health service of the State, counties and cities, permitting them to disseminate instruction and information among the people, to gather facts about the causation and prevalence of disease, to enact rules and legislation that will protect the people from the ignorant, the careless, and the indifferent, to enforce the observation of health laws, will do a great deal toward protecting the health of the whole people.

We need in Tennessee a vital statistics law that will insure

the immediate registration of every birth and every death. Then can we tell how many children are born to our State; then will we be able to tell something definite about the movement of population; then can we tell with certainty what diseases are killing our people and then will we be better able to combat these diseases. When we have an efficient vital statistics law, your compulsory school laws will mean something, and they will not mean much until you have. When we have an efficient vital statistics law your child labor laws can be enforced if you want them to be. When we have an efficient vital statistics law the legality of birth of your child, his right to citizenship, and his property rights can be proven in a court of law. When we have an efficient vital statistics law child murder and other crime will decrease.

We need for the public health service in Tennessee an hygienic laboratory where it may be found promptly by scientific methods whether your child has diphtheria, so that prompt measures may be taken to prevent the spread of the disease; where examinations may be made for the diagnosis of typhoid fever, consumption, and other disease. This laboratory could be maintained at a small expense to the State and would save many dollars for its citizens by the prompt diagnosis of disease of communicable nature. Not only so, but this laboratory could prepare antitoxin for the cure and prevention of diphtheria at a cost that would save the State thousands of dollars. These are a few of benefits that would be derived from a State laboratory and there are others just as important.

We need to have a practical system of medical inspection of school children so that hundreds of our children that are now suffering from disease of a curable nature and defects that can be corrected may have the fullest opportunities for receiving the education that ought to be theirs.

We ought to have a sanitary engineer who could take measures to protect our public water supplies, give advice to towns and cities concerning the installation of water systems and sewerage, and otherwise safeguard the health of the State.

We need more power for the State Board of Health that they may promulgate rules and regulations and enforce the observance of the same.

We want the hearty co-operation of every citizen in the matter of the conservation of the public health, the respect for the laws which we have, the observance of sanitary rules of living, the support of the people for a demand for better health laws.

The State Board of Health and other public health agencies in the State are doing what they can for the instruction of the people in regard to the prevention of disease. Free literature about consumption, typhoid fever, hookworm disease and other communicable and preventable diseases will be sent to any address in the State.

THE COST OF PRODUCTION OF FARM CROPS.

F. W. Gist, Special Agent, United States Department of Agriculture, addressed the Convention as follows:

I desire to say in the outset that my remarks on this subject will be my own individual views. Some investigations have been made by my department, but I do not know that it has reached any official conclusions as to what ought or ought not to be included in the cost of production. But my own investigations have led to some positive conclusions as to what ought to be included, and these I am pleased to give you for what they are worth, with the hope that they may at least lead you to become interested in what I believe to be a very important feature of the business of farming.

Farming is a business; and the farmer is as much a business man as the merchant. As such a record of his transactions are as necessary to success as it is to any other business man. There was a time in our recollection when the individual merchant who bought and sold for cash did not consider it necessary to keep books or accounts. Now even though every transaction is represented by the income or outgo of actual cash, every business man finds it necessary to keep a record of such transactions in order to determine where his profits and losses occur. It is only in this way that he can perpetuate the successful features of his business and eliminate those which are unprofitable. It can scarcely be a question open to discussion that the farmer must do the same thing if he is to perpetuate and improve the

profitable features of his business and eliminate or change his methods of growing those crops which are now grown at a loss.

I can not go into the broad subject of farm accounting here, though we might find it interesting. I will say, in passing, that not enough farmers keep accounts. Even in our colleges of agriculture not enough importance is attached to this subject.

In the business of farming there are many features upon which the final balance of profit or loss depends, such as the cost of keeping up the farm as a whole, caring for the live stock, providing for the family living, etc., but we must confine ourselves on this occasion to our subject and discuss the cost of producing crops.

I do not propose to tell you what it costs to produce a crop. I do not know, and I do not believe that but very few producers of crops know. In April of this year the Bureau to which I am attached published a report on the cost of producing corn in 1909, which was followed in later months by similar reports regarding wheat and oats. The report for Tennessee on corn, being the average of returns from 144 farmers, disclosed the fact that corn was produced in Tennessee in 1909 at a cost of 40 cents per bushel, with an average yield of 30.8 bushels, and was valued at 69 cents, showing a profit of 29 cents, or 70 per cent on the cost. This may have been fairly representative of results for the entire State for that year, but with a different yield and a different price for corn or a difference in the method of cultivation the results would have, of course, been different.

It is my purpose to discuss here the elements which enter into the cost of production, or how to determine the cost of producing a crop. In following this line of thought we will naturally be presented with a suitable form for keeping the record from which this cost must be compiled.

Every crop planted on a farm is a distinct part of the owner's business, just as every character of goods sold by the merchant is a distinct source of profit or loss. It is really easier for the farmer to determine the actual cost of each of these features of his business than it is for the merchant to determine the cost of selling each particular character of goods from his shelves. This is evident, because the farmer will devote the continuous time necessary to completing the planting and cultivating, or

harvesting, of a particular crop, perhaps, before he turns his attention to another crop, while the merchant or his clerk is repeatedly, during each day, dividing his time between the selling of different kinds of goods. Hence, it is entirely practicable for the farmer to keep an account of the receipts and expenditures for each of his individual crops, especially those principal crops upon which he really depends for his main income.

In determining the elements which enter into the cost of production we are assisted very materially by a knowledge of what is required to produce a crop, and we find that the elements of cost follow very closely the elements of growth, or at least those over which the farmer has control.

In order to produce a crop we must have and use, in the order named:

First, the land.

Second, the land prepared.

Third, the seed.

Fourth, the seed planted.

Fifth, the plants cultivated.

Sixth, the crops gathered.

Seventh, the crops marketed.

Whatever these seven elements cost, either in labor or investment, constitute the cost of producing and marketing a crop. Therefore, an account kept of the expense of production must follow, in some convenient form, this arrangement. Labor constitutes the principal investment in the business of producing a crop. That labor must be performed either by man or beast, usually both. Therefore, outside of the proper rental return of the land, which is the original investment, the cost of production is made up principally of the cost of labor of man and beast. How to determine the proper cost to attribute to this labor is the point at issue here, as well as the correct determination of what should be a fair rental return for the land used. Therefore, the use of labor and its attendant cost will be discussed about in the order suggested above as needed at the various stages of production.

The land upon which a crop is produced, as said above, is

the principal investment of the farmer, just as the cash paid into a mercantile business is the principal investment of the merchant. It is rightfully considered that the interest on the investment is the first fixed charge against the business. It is equally true that a fair interest upon the value of the land used in producing a crop is the first cost of production. This interest is known as the rental value of the land. How should that rental value be determined? The most reasonable answer to this question appears to be that each farmer ought to charge against his crop the rate of rental which is customary in his community for the same character of land. If, by renting out his land, he can get for it \$3.00 per acre, or, if he sought to rent land for his own use he could obtain it for a rental of \$3.00 or \$4.00 per acre, that ought to be considered a fair price to fix as the rental value of his own land when used by himself. If, on the other hand, he can rent his land for a certain proportion of the crop produced, or, if he can rent land for his own use upon such terms, he ought to use the same custom in dealing with his own land for his own use. Therefore, he will charge against the crop on a piece of land whatever is the customary charge in his community for the same character of land when used for the same purpose. This may or may not give him a fair interest return on the value of his land. If it does, there is no question as to the correctness of the charge; if it does not, then there is something wrong, either with the price which custom has fixed, or with his own idea of the value of his land; but he certainly should receive no more nor less from the crop as rental for his land than he could receive from a tenant, or than he would have to pay if he were renting as a tenant.

Coming to the second step in the production of a crop, we must determine what is a proper charge for preparing the land for the coming crop. This preparation is, in practically all instances, accomplished by plowing with a man, a plow, and a team. If this combination is hired it will be at the customary rate per day, or per hour, which prevails in the community. If a man owns such a combination and desires to hire it out to others for wages, he will be compelled to accept such wages as are customary in the community. Therefore, it is contended that the farmer should charge against his crop for the labor of himself

and his team and his implement such rate of wages as is customary in the community for the use of such an outfit. Hence, from the first breaking of the soil to the time of planting, he should charge against each crop, as cost of preparation, his own and the labor of his team and implement at such rate per hour or per day as is customary in his community.

Under the head of preparation may be properly included the cost of any fertilizer used as well as its application. If this consists of commercial fertilizer the cost of its purchase and application will be readily determined by adding to its purchase price the value of the labor required to spread it. In the same way will be determined the cost of assembling barn-yard or vegetable manure and distributing it. If a crop of cow peas has been turned under previously it will be proper to charge here the cost thereof, although if a land account is kept such a charge might be made in that account, in which case it should be taken care of in the item of rent charged against the crop.

In this connection, it is the contention of some that each crop ought to be charged with the cost of feeding the team in addition to their regular daily wage. This idea is thought to be erroneous, for the reason that the cost of feeding the team and keeping the implement in repair, as well as the cost of the man's own living, should be cared for out of the wages received, and the rate of wage should be, and is, fixed by the community with the view of caring for this expense. Therefore, if the farmer desires to know whether his own labor and that of his teams are profitable, or otherwise, he should keep a separate account against himself and his teams, to which he should charge the expense of living, and credit the receipts for labor performed. Certainly it is not fair to charge the crop with the regular rate of wages and at the same time charge it with the cost of keeping a man and team. If, then, we have settled the correct theory of a charge for labor of man and beast and for the use of implements, this theory will run throughout the entire period of cultivation whenever such labor comes into play.

Having accomplished the preparation of the soil, and coming to the time of planting, we are confronted with the cost of the seed which we place in the ground. This is a simple matter of determining the proper valuation to be put upon the seed used.

Whether the seed are purchased, or whether they come from the farmer's own stock left over, their reasonable value should be charged against the crop when they are placed in the soil.

Throughout the cultivation season, the crop should be charged with every hour or day of labor expended upon the crop in question, according to the theory discussed above.

There are many miscellaneous items of cost which must largely be determined at the time the expenditure is made. It has been said above that the cost of an implement, which is going to be used for a number of crops, should not be charged to any particular crop, because it may be used for all crops and for a number of years, and only a fair rate of wage should be included for it in the wage allowed for the combination of man, animal, and implement. If, however, certain repairs are necessary on the implement for a specific crop, such as blacksmithing for a certain purpose, or other little items of expenditure along this line, which may be necessary for this particular crop, the expenditure should be charged thereto and become a part of its specific cost.

We have come now to the gathering or harvesting of the crop. This is also performed by the labor of man, or beast, or both; sometimes in connection with the use of a mechanical implement. Here the same rule of determining the proper charge should be followed as that discussed above, allowing the customary wage to the man and the team and for the use of the implement as is customary in the community. In some communities cotton pickers may be hired for 75 cents per one hundred pounds; in others it may be necessary to pay \$1.00 per one hundred. If the man and his family accomplish the picking of his crop, they should be allowed the same rate of wage which would be necessary if hired hands were used in gathering. The same principle will apply to the gathering or harvesting of all crops, and every hour of labor should be included in this cost, whether paid for by the amount of work performed or by the hour.

The cost of marketing will now be charged, and all labor or other expense necessary in connection with the preparation of the product for market, or with conveying it to market, should be included. If this is a matter of the farmer's own labor and that of his own teams, the same principle will be applied as is

discussed above. This item of cost will include the ginning of cotton, the threshing of wheat and oats, or the husking and shelling of corn. If, instead of taking the product to market, it is placed away in the bin or barn, the cost should be charged just the same.

At this point the total cost of producing a crop has been arrived at, and the farmer is ready to receive in money, or its equivalent, the returns of his year's business. A record of these returns is a simple matter and is confined to the actual amounts received. However, in many instances, the product is not sold immediately and is, in many instances, kept for personal use. In such cases the crop should be credited with the market value of the product at the time it is laid away or finally taken out of the process of production. Therefore, the receipts of the crop will consist of the actual amount received upon marketing same, or the market value of the product which is unsold or on hand. In the case of cotton, for instance, the receipts may be had for the crop sold in the seed, or it may be that the lint is sold and the seed retained. In such cases the crop will be credited with the amount received for the lint cotton and with the market value of the seed which is put away for future disposition or personal use. The same thing may be true of the corn crop, a portion of it being actually sold for money and a part retained for use. The crop should be credited with the aggregate amount gathered at the market value.

A comparison of the total value of the crop thus determined with the total cost already determined will show the profit or loss sustained on this particular crop. Such an account as is suggested above, kept for all the crops, will make a complete record of the farmer's business, and an aggregate of his profits and losses will show the aggregate of his business for the year. If one crop makes a profit and one a loss, he will know it, and his record will, in all probability, enable him to repeat his profits the coming season and steer clear of his losses.

The form of such an account as has been discussed above is given in this connection, which seems to cover all the points which have been discussed and which enter into a complete transaction for the given crop. A study of this form will, in a measure, supply the farmer with a basis for studying the whole

question of farm accounts. To the studious farmer will doubtless occur some changes, which may suggest themselves to him, and which may be in his individual case desirable. Every book-keeper will perhaps make his form of books conform closely to the requirements of his own particular line of business, as well as to his own individual ideas of the record desired. This will be true as well of the farmer, and especially after he has given some careful thought to the subject.

HISTORY AND COST OF-----CROP

Field or Plat----- *Number of Acres*----- *Character of Soil*-----

Date	Description of Cultivation	Implement	Depth of Cultiva- tion	Hours		Total	
				Man	Team		
	First Breaking-----						
	Harrowing-----						
	Second Breaking-----						
	Harrowing-----						
	Preparation of Seed Bed.---						
	Planting-----Seed Valued at,						
	Labor of Planting-----						
	First Cultivation-----						
	Second Cultivation-----						
	Third Cultivation-----						
	Fourth Cultivation-----						
	Fifth Cultivation-----						
	Miscellaneous-----						
	Rental Value of Land-----						
	Total hours and cost of cultivation-----						
	Gathering or Harvesting---	Amount gathered					
	Total-----						
	Cost of Marketing-----	Amount Marketed					
	Total-----						
	Total amount of labor and cost of crop----						
	Receipts-----	Amount			Price per unit	Total	Val
	Value of product unsold or on hand-----						
	Total Value of crop-----						
	Profit or loss-----						

DEDUCTIONS

Cost of:	Per acre		Per unit			Per acre		Per unit	
Prep. of land...					Receipts:				
Planting.....									
Cultivation.....									
Miscellaneous...					Total.....				
Rent.....					Profit or loss...				
Gathering.....									
Marketing.....					Yield per acre..				
Total.....									

It will be seen that this form provides first for recording the kind of crop concerning which the record is kept. The particular field in which it is grown may be described by number or letter. The number of acres devoted to the crop must be set down in order to make up the summary at the end.

In the main body of the form is found first the date column, in which the correct date of transaction should be entered. Next is provided spaces for each possible character of cultivation or item of cost from the first breaking to the final marketing of the crop. A space will be found for recording the number of hours of labor of man and team, and in the last column the total cost of each act of labor or expenditure will be recorded. Also spaces for the record of receipts, which will include the yield, and for the profits or losses are provided.

In the summary of such a record many things of interest may be determined. The cost of each stage of production can be found, as well as the total cost per acre and per unit of measurement, and the profit or loss per acre and per unit. We have naturally found the yield per acre. We may find the ratio of rent to the value of the land; the proportion of cost which each stage of production bears to the whole, etc.

If such a record has been kept for each crop you will know the two things which are of all importance. The first is which crop is most profitable and the second whether you have received a price for your product which is within the cost.

Much discussion has been given to the question, What is a fair price for agricultural products? I do not see how the question can be answered unless the cost of production is known. Of course, the grower ought to get all the market will stand; but the grower occupies an economic relation to the consumer,

whose rights are also entitled just consideration. This, however, is another story, with which we are not dealing here.

Know whether your business is profitable, and know it from an accurate record. Find out where your losses occur and stop the leak. Learn where your profits come from and enlarge them if you can.

If your Commissioner of Agriculture had a thousand such records as we have discussed relating to the principal crops grown in this State he could point some lessons from them which would be most valuable to you. I hope he will take up the subject and that you will be prepared to help him. I hope your very excellent school of agriculture will teach your boys more about this subject so they may improve on the business methods of their fathers as other boys are doing in other lines of business. I hope you may find time next season to watch this feature of your business and receive from it the many items of importance and interest to be gathered.

The Convention then adjourned till 9:30 o'clock, Thursday morning.

THIRD DAY—THURSDAY, DECEMBER 7, 1911.

MORNING SESSION.

The Convention was called to order at 10:00 o'clock by President Warren.

Invocation by Dr. J. S. French, Pastor of McKendree Methodist Church, Nashville.

FEED AND SEED CONTROL LAWS IN TENNESSEE.

A. L. Garrison, Chief Feed and Seed Inspector of the State, was introduced and spoke as follows:

I especially appreciate this opportunity because it affords me the pleasure of meeting the representative farmers of Middle Tennessee. I have, so far as I have been able, kept up with the county institutes throughout this division, of which this is a climax. These meetings have reminded me of a good revival meeting. These revivals are conducted by the preachers preaching sermons and the congregations singing hymns that had a direct bearing on the object sought. I have seen a chill thrown over the result and good accomplished in these meetings by a 2 x 4 preacher getting up on the last day and preaching what he termed a doctrinal sermon.

I am on the program to discuss our feed and seed laws, their benefits to the farmer, etc., but before I do take them up briefly I want you to allow me to talk to you just a little while about farms, farmers and farming. In my experience as a farmer I have found this discouraging feature: that we are too prone to discredit and discount our habitation as a citizen of this great State, and the opportunities offered to us in agricultural pursuits. I want to say something that will encourage you in your chosen avocation. If I can do this I will be perfectly satisfied.

There is absolutely no question that the man who captures the nitrogen in the air, and conveys it to the growing plant in

sufficient quantities, will be greater and receive more fame, and deservedly so, than that wonderful wizard who harnessed the lightning and made it work for the convenience and comfort of mankind. The person who can and does discover a well understood process of plant breeding will have done more for posterity than all the living and dead statesmen, financiers and promoters of the present and past ages. Just a word as to the importance of plant breeding—and I speak upon the authority of Thos. F. Hunt, a recognized authority on American cereals—the individual plant is the result of two forces, viz.: environment (climate, soil, fertility, culture, etc.), and heredity (parents, grandparents, etc.)

The increased yield of a crop by modification of environments, although a necessary process to successful agriculture, can only be accomplished by an expense more or less considerable. Heredity, however, is a silent force, which acts without expense. If a plant be discovered that would produce because of the force of inheritance only one grain of maize more on each ear than at present, it would be capable of increasing the maize crop of the United States five million bushels. Not next year alone, but for years to come. In fact, the vast possibilities of plant breeding cannot be estimated. If I were asked to name the greatest American citizen I would unhesitatingly shout the name of Luther Burbank. This wonderful man makes this interesting statement. It would not be difficult for one man to breed a new rye, wheat, barley, oat or rice, which would produce one grain more to each head, or a corn which would produce an extra kernel to each ear, another potato to each plant, or an apple, pear, plum, orange or nut to each tree. What would be the result? In five staples only in the United States alone, the inexhaustible forces of nature would produce annually without effort and without cost:

5,200,000	extra bushels of corn		
15,000,000	“	“	wheat
20,000,000	“	“	oats
1,500,000	“	“	barley
21,000,000	“	“	potatoes.

These vast possibilities are not alone for one year, or for

our own time or race, but are beneficent legacies for every man, woman and child who shall ever inhabit the earth. This does not apply alone to the absolutely necessary products of agriculture. Who can estimate the elevating and refining influences and moral value of flowers, with all their graceful forms and bewitching shades, combination of colors and exquisitely varied perfumes? These silent influences are unconsciously felt even by those who do not appreciate them consciously. This with better and still better fruits, nuts, grains and flowers will the earth be transformed and man's thoughts turned from the base destructive forces into the nobler productive ones which will lift him to higher planes of action towards that happy day when man shall offer his brother man not bullets and bayonets, but richer grains, better fruits and fairer flowers.

So it can be clearly seen that there is no place in all the realm of human activities where a combination of labor and learning is more essential than upon the farm. There is no intended reflection upon the thoroughly up-to-date professional or business man of the city, but we must conclude that the city is responsible for its congested condition and surplus of idlers. Addison Bennett, the journalist, hit the key note when he said: "For many years, far too many, the 'poor' farmer and his neighbors have been the butt of ceaseless ridicule."

The comic papers have cartooned them, the jokesmiths have lampooned them, the metropolitan newspapers have turned nearly all of their alleged funny paragraphs against them, and the city dweller has made all manner of fun of them. "The Rube," "The Hayseed," the "Gold brick victim" and the "Weary Willies"—all of these were depicted as the product of the farming district.

City folks might visit the country and expect to find potatoes growing on trees, see cabbage dug from the ground and pickles harvested from bushes, then go back to their city homes and make fun of the antiquated bonnet of the farmer's wife, to ridicule the farmer for his nannygoat whiskers, to laugh at sister for doing her hair up in an ancient style and to jeer at brother for wearing his pants in his boots, and, finally, to depict the entire farmer folk as utterly impossible from a society standpoint.

When father, mother, sister and brother returned these visits it was considered great fun to take them to a restaurant and have them discover that a Welch "rabbit" is not a species of game and many other like stunts. But conditions like these have and are changing—the city and country brother have joined hands, recognizing the fact that one cannot prosper without the other.

It has lately been discovered in discussing the high "cost of living" that there is a screw loose somewhere. It has dawned upon us that the nation has grown top-heavy with too many sky scrapers and too few well tilled fields, too many miles of paved streets and too few country highways, too many consumers and too few producers. Now there is an insistent cry: "Back to the farm," back to the farm from whence we and our sons and daughters were driven by ridicule, sarcasm and mendacity. But let us thank the good Lord that there is a movement "back to the farm," and the sons and daughters are less inclined than formerly to leave the old home, with its independence, its wholesomeness, its healthfulness and love, to become underlings and menials near the great whiteway—there to lose their identity, their individuality and frequently their respectability. The country people are fast coming to their senses, particularly in Sunny Tennessee, demonstrating to the world that the frugal, industrious, intelligent and conscientious husbandman is sure of a rich reward while the life of himself and family may be made to very closely approach the ideal.

In order that a chemist discover new chemicals it is necessary that he have a laboratory, the astronomer to discover new planets must have the necessary equipments and paraphernalia, the machinist and mechanic must have his shop. What is true of these is also true of the agriculturist, who must have his field of action. He must have the proper climate, embodying sufficient rainfall, temperature, etc., coupled with the fertility of the soil. Go with me from the Atlantic to the Pacific, from the Great Lakes to the Gulf, we will go further and travel through every State in this proud Union, leaving all prejudice behind, you will be compelled to agree with me that Tennessee, with a climate that is a happy medium, a compromise between the extremes of the North and the South, no day, winter

or summer, too severe for out-door work, with its schools, colleges and seminaries, with its adaptation to a variety of crops, offers the greatest opportunities to the farmer of any other section or State in the land. You may sing to me of good old Manhattan Isle, the Burrough of Brooklyn of Greater New York, you may point the advantages of the Middle West, the Northwest, the East or the extreme South in the most eloquent and beautiful language, but when I think of West Tennessee with its broad acres of cotton and great river, Middle Tennessee with its golden harvest and fertile valleys, East Tennessee with its mineral-laden hills and majestic peaks, there wells up within my breast our national anthem: "My country, 'tis of thee, sweet land of liberty."

Up to ten years ago the farmers of this State and the country in general were indolent and idle in regard to needed legislation, but not so to-day. You will find the farmer as ably represented in the legislative halls of the State and nation as are the legal and medical fraternity, organized labor, the politician or the corporation.

It is concerning the benefits derived from the enactment of two laws which were placed upon our statute books by the Legislature of 1907 and 1909 that I want to direct your attention for a short time. A more pathetic scene was never drawn on the canvas of the imagination, and if I were an artist I would draw it upon real canvas. The scene is this: a gentle, meek-faced, wild-eyed dairy cow being unresistingly led to the slaughter pen, or worse still for her being kicked out of the dairy herd of which she was proud, all for no other reason but that she was unable to manufacture good, rich milk out of sweetened sawdust, corn-cob meal, rice chaff, oat peanut hulls and kindred materials. The climax to the scene is a cold blood murder, the murderer being the dairyman who had been defrauded by an unscrupulous feed dealer or manufacturer. The law that undertakes to put an end to these tragedies is what is known as the Tennessee Feed Control Act, the same being House Bill No. 495, Chapter 434:

TENNESSEE FEED CONTROL ACT.

AN ACT to regulate the sale of concentrated commercial feeding stuffs; to define concentrated commercial feeding stuffs; to prohibit the adulteration of concentrated commercial feeding stuffs; to provide for the correct weighing and marketing for making analyses and collecting samples of concentrated commercial feeding stuffs; to prescribe penalties for the violation of this Act; to vest the execution and enforcement of this Act in the Commissioner of Agriculture, and authorize him to prescribe rules and regulations therefor, and to repeal Chapter 465 of the Acts of the General Assembly of the State of Tennessee for the year 1907, being an Act entitled "An Act to regulate the sale of concentrated commercial feeding stuffs and the materials from which they are manufactured; to define concentrated commercial feeding stuffs; to prohibit the adulteration of commercial feeding stuffs; to provide for the correct weighing and marketing, for making analyses and collecting samples of commercial feeding stuffs; to prescribe penalties for the violation of this Act, and vesting the execution and enforcement of this Act in the Commissioner of Agriculture."

SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee*, That every lot or parcel of concentrated commercial feeding stuff sold, offered or exposed for sale within this State shall have affixed thereto, or printed thereon in a conspicuous place on the outside thereof, a legible and plainly printed statement, in the English language, clearly and truly certifying the weight of the package (provided that all concentrated commercial feeding stuffs shall be in standard weight bags or packages of 5, 10, 25, 50, 75, 100, 125, 150, 175, or 200 pounds); the name, brand or trademark under which the article is sold; the name and address of the manufacturer, jobber or importer; the names of each and all ingredients of which the article is composed; a statement of the maximum percentage it contains of crude fiber, and the percentage of crude fat, and the percentage of crude protein, and the percentage of carbohydrates, allowing one per cent of nitrogen to equal $6\frac{1}{4}$ per cent of protein; all four constituents to be determined by the methods in use at the time by the Association of Official Agricultural Chemists of the United States.

SEC. 2. *Be it further enacted*, That the term "Con-

centrated commercial feeding stuffs," shall be held to include all feeds used for live stock and poultry, except whole hays, straws and corn stover when the same are not mixed with other materials; nor shall it apply to the unmixed whole seeds or grains of cereals when not mixed with other materials.

The following amendment was made to the Feed Control Act of 1909 by the Legislature of 1911, the same being House Bill, No. 178, Chapter 49:

SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee*, That the Act, the title of which is set forth in the caption hereof be, and the same is hereby amended by inserting in the proviso set forth in parenthesis in the first section of said Act, after the figure "5" and before the figure "10" the figures "8 1-3;" so that said proviso shall read as follows:

Provided, That all concentrated commercial feeding stuffs shall be in standard weight bags or packages of 5, 8 $\frac{1}{3}$, 10, 25, 50, 75, 100, 125, 150, 175 or 200 pounds.

SEC. 2. *Be it further enacted*, That this Act take effect from and after its passage, the public welfare requiring it.

SYNOPSIS OF THE LAW.

1. The law requires that all commercial feeding stuffs, sold or offered for sale in the State of Tennessee, shall be registered with the Commissioner of Agriculture.

2. The following must be registered: Number of pounds in the package, the name of the feed, name of each ingredient of which the feed is composed, the guaranteed analysis—giving percentage of protein, fat, fiber and carbohydrates, and the name of the manufacturer.

3. Where standards are established the feeds must meet these standards.

4. Where no standard is established, the manufacturer may

make his own guarantee, but is required to live up to his guarantee.

5. All commercial feeding stuff must have the requisite number of stamps attached, except when used *for mixing purposes only*.

6. No feed can be adulterated with substances of little or no feeding value, such as corncobs, peanut shells, oat hulls and chaff and rice hulls.

OBJECTS OF THE LAW.

1. To have all feeds offered or exposed for sale or sold in the State labeled so that the consumer may know their composition and the materials used in their manufacture.

2. To protect the consumer against adulterated or inferior feeds which up to the time of the passage of the law he had no means of determining.

3. To protect the honest manufacturer and dealer against dishonest competition.

4. To inform the consumer as to feeds which were the most economical to purchase, and to promote the rational use of feeding stuffs.

WHAT HAS BEEN ACCOMPLISHED.

1. It has placed the feeding stuff trade on an honest basis, and mixtures of wheat, bran, middlings and other products with corn bran, screenings, sweepings and such materials are now sold to the consumer for what they really are, and not as Pure Wheat Bran, Middlings, etc.

2. It has prevented the makers of adulterated feeds from offering them as pure products, and has practically eliminated the use of corncobs, oat hulls, peanut hulls and like materials as adulterants.

3. It has decreased the sale of a number of inferior feeds composed largely of worthless materials.

4. It has increased the demand for Tennessee by-products.

5. It has led consumers to investigate the different feeds, and has thus increased the sale of standard feeds of known value.

6. It has reduced the sale of a miscellaneous collection of compounded feeds.

7. Consumers are becoming educated to the desirability of investigating the feeding stuffs offered for sale and purchasing those which contain the feeding ingredients needed in the most desirable form and at the best price per unit rather than at the price per ton. In other words, they are beginning to purchase feeding stuffs on the basis of obtaining the feeding ingredients desired from the best sources which are generally if not always the most economical.

8. It has reduced the sale of a mass of condimental feeds for which extravagant claims were made and exorbitant prices asked.

9. In a number of cases where the inspection analysis has shown a feed of inferior quality, due to poor processes of milling, the manufacturer has taken steps to adopt more up-to-date methods, which will materially benefit both his customers and himself.

10. It has equalized and promoted uniformity in the selling price of feed.

11. By increasing the sale of standard feeds of high character, it has redounded to the benefit of the honest manufacturer and dealer.

12. It has prevented Tennessee from being the dumping grounds for feeds of inferior quality, which could not be sold in States having Feed Stuff Laws.

Protein.—Protein is a general term which includes all those nitrogenous materials of a feeding stuff which bear a general resemblance in composition and properties to white of egg (egg albumin), lean meat (flesh fibrin), and curd of milk (milk casein). These nitrogenous materials are the most costly ingredients of feeds.

Carbohydrates, also called "nitrogen-free extract," "starches, sugars, etc.," includes starch, gum, sugar and pectin bodies.

Fiber is the essential constituent of the walls of vegetable cells. It is seen in a nearly pure state in cotton fiber or paper pulp. It is the most indigestible part of the vegetable substance, and of quite subordinate value in the ration.

Ether extract includes everything which can be extracted from the perfectly dry feeding stuff by absolute ether, and consists mostly of fat oils and solid fats, together with wax, chlorophyl and other coloring matters.

The uses of the above named parts of feeds are as follows:

Water and ash need not be considered, for while they are indispensable to stock, both are abundantly supplied more cheaply from sources other than bought feed.

Protein may easily be made over by the animal into its own substance, such as the muscles, tendons and various other working parts of the animal, because these necessary parts of the animal machine are themselves made up of the same kind of materials as protein.

Fiber and the *carbohydrates* cannot, on the other hand, properly serve at all for building up the muscles and other parts of the growing animal, nor restore the waste and wear of those parts in mature animals, because they are of a very different nature. They contain no nitrogen, an element which enters into all the animal's tissues (protein) to the extent of some 16 per cent of the dry tissue. The fat, fiber and carbohydrates are very much to the animal what coal and fuel are to the steam engine. Their consumption generates the power which runs the mechanism, and their burning (oxidation) in the blood of animals produces the results of life just as the combustion of coal under the boiler produces the motive power of the steam engine. For this combustion in the animal system fat has more than twice the value of the digestible carbohydrates. Proteins, on the other hand, are to the animal very much what iron and brass are to the steam engine.

The majority of feed dealers and manufacturers are honest, upright business men, anxious to obey the law, at the same time striving to give the consumer the very best feed possible at the lowest price consistent with good business methods. But

in all avocations and lines of trade there are crooks, and this is no exception to the general rule. The Department of Agriculture, with the aid and co-operation of the farmer, consumer and honest manufacturer, is determined to correct some, if not all, of the many abuses.

CHAPTER 395, ACTS OF 1909.

AN ACT to regulate the sale of agricultural seeds, to provide a standard of purity for such seeds, to prescribe penalties for the violation of this Act, and vesting the execution and enforcement of this Act in the Commissioner of Agriculture.

SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee*, That every parcel, package or lot of agricultural seeds as hereafter defined in this Act, and containing one pound or more, offered or exposed for sale in the State of Tennessee, for use within this State, shall have affixed thereto, in a conspicuous place on the outside thereof, distinctly printed, or plainly written, in the English language, a statement, certifying:

First—The name of seed.

Second—Full name and address of the seedman, importer, dealer or agent.

Third—A statement of the purity of the seed contained, specifying the kind and percentage of the impurities as defined in this Act, provided that said seeds are below the standard fixed in this Act.

Fourth—Locality where said seed was grown, and when grown.

SEC. 2. *Be it further enacted*, That the term, agricultural seeds, as used in this Act, shall include the seeds of the red clover, white clover, alsike clover, alfalfa, Kentucky bluegrass, timothy, brome grass, orchard grass, red top, meadow fescue, oat grass, rye grass and other grasses and forage plants, flax, rape and cereals.

I could devote a great deal more time to the benefits derived

from these two laws, but I fear that you feel that I have already squandered enough of your valuable time. In rendering your verdict I want you to pursue the course of the newly elected Justice of the Peace I once heard of. He was a smart fellow, but uneducated. He had been around the Court House and had picked up a few legal phrases with no idea or thought as to their meaning. Two of these words, as I remember the story, were *corpus delicti* and *advisement*. The first case was presided over with a great deal of dignity by His Honor, and after the proof had all been taken and the lawyers of each side had spoken, the Court made this solemn announcement. Gentlemen, I will take this case under advisement until to-morrow morning at 10:00 o'clock, at which time I will render a verdict in favor of the defendant. So if you are displeased and disappointed please take the case under advisement until to-morrow, and probably by that time I will be chasing a car load of rice hulls out of the State and will not have time to brood over my failure.

TRUCK GROWING IN MIDDLE TENNESSEE.

Mr. J. N. Meroney, of Maury County, was next introduced and spoke as follows:

I will first call your attention to the natural advantages of our section for this kind of farming—its adaptability to this special line of work. We have here all varieties of soil, from the heavy deep alluvial soils of our river bottoms, to the light freestone soil of the highland rim and the mountain plateau. Soil can be selected suitable for any vegetables, fruits, or berries that can be grown in the temperate zone. Our climate is mild, allowing out door work nearly the whole year, with long growing seasons, early springs and late falls, enabling us to grow two crops a year of many vegetables.

We are favorably situated midway between the large cities both to the north and south of us, with direct and quick railroad transportation to the splendid markets those cities furnish. What crop shall we grow? Potatoes, tomatoes and cantaloupes have been our best shipping crops; but we can profitably grow

early apples, Kiefer pears, strawberries, raspberries, watermelons, onions, celery, asparagus and early green beans, for shipment and many other vegetables to sell in our home city and town markets. And for our home gardens, we can put our early potatoes, tomatoes, early apples and strawberries in the markets of the large northern cities some weeks before their home products are available, and when the prices are best. We have some soils that will grow as fine cantaloupes as the famous Rockyford region of Colorado, and we can put them on sale in northern cities two weeks before the northern crop. We can grow as fine strawberries as anywhere in the world. Our early apples are always eagerly taken in the northern cities. Of course, these crops for distant shipments must be grown in communities so as to get cheapest car load freight rates.

Let us notice some of the advantages of the business of truck growing over general farming in a community. Less land is needed for cultivation, so that more acres may be sown to grass and clovers and rested up and improved. More labor is required, more fertilizers are needed, better and more thorough cultivation is needed; as the favorable results of manure is noticed more extra care will be used in saving and using it, thus building up and sustaining farm fertility and encouraging more intelligent cultivation. In general farming, as wheat, corn and cotton, it is almost impossible to improve or even sustain the fertility of the farm, while truck growing is sure to make the land more productive; less of the natural fertility is sold off and more of the fertilizing elements are yearly added. Nature's law of rotation has to be more closely studied and followed, because of the increase of insect pests and fungus diseases peculiar to the many different crops. Grain and cotton growing bring in the farmer cash returns once a year, so that many farmers have to buy their farm implements and family supplies on credit, while the truck grower, getting his money often, is able to buy his supplies much cheaper for cash. A truck growing community requires smaller farms; this increases the population in a community and gives more pleasant social surroundings, builds up better schools, better churches and better county roads. Truck growing benefits all other business enterprises,

because it produces more per acre and those products when sold in distant markets bring foreign money into home circulation. It does not require such heavy expenditure for land investment, so that men of moderate means may become home owners and make better and more contented and useful citizens.

Successful truck growing requires fewer acres, but they must be fertile. Certain things are essential to plant growth, phosphorus, potash, nitrogen, sunshine, air and water. In the most of our Middle Tennessee soils the supply of phosphorus is sufficient. Our red clay subsoil is well supplied with potash. Deep plowing and deep rooted plants, like clover and peas, will make that available for all needs. The air is full of nitrogen and the great Creator has given us the leguminous plants whose leaves absorb it from the air and the roots place it in the soil for the growth of other crops. God gives us the air and sunshine at the proper season and sends water from the clouds sufficient every year for crop growth, if we will work to save it. This we can do if we make a reservoir to hold it in the soil by deep plowing, making the soil loose and spongy-like, by turning under stable manure and crops of green vegetation, and then give level surface cultivation often repeated to hold the water from evaporating. Improved farm implements have taken away much of old time back-breaking hoeing and hand weeding from the truck grower, so now it is not such hard work. Reliable seeds of all kinds can be now obtained at reasonable cost of professional seed growers. This is much better than sowing our own seed. There are some other branches of farming that dovetail in with truck growing very closely and profitably. One of these is dairying. This fits in well. Dairying is peculiarly the work of the early morning and late evening, while truck growing suits the sunshiny part of the day. Truck growing requires little land to cultivate, while the dairy cow can use the other parts of the farm for pasture, making it more fertile every day until it comes back into the rotation able to produce paying crops. Much of the refuse of the truck garden, by the use of the silo, makes the very best food for the dairy cows, while the refuse from the cows' stable makes the best of food for the truck garden. No business we can follow will build up and make land fertile so fast as dairying and no business

we know of can use that increased fertility to better advantage than truck growing.

There is another side-line that fits in well with truck growing and adds to its profits. That is home canning. A small home canning outfit can be made very profitable in saving many fruits, berries and vegetables that would go to waste. If there is a glut in the tomato market, they are only bringing twenty cents a bushel, stop selling, can the surplus, put them away for winter and get two dollars per bushel. If your snap beans do not pay to take to market, put them in cans and get a good price. Do the same with sweet potatoes, pumpkins, hubbard, squash, pears, peaches, grapes and apples. The process is simple, the work is easy, the profit is sure.

I thank you for your kind attention.

President Warren then briefly addressed the Convention, stating that he wanted those present to know that they could send to him at his home at Spring Hill, Tenn., for all kinds of literature on "Dairying."

THE FARMERS' EGGS AND BUTTER.

Dr. Lucius P. Brown, State Food and Drug Commissioner, was next introduced, and addressed the Convention as follows:

Within the limited time at my disposal I want to tell you of some work your Food and Drugs Department has been doing of late, and its bearing on your business. First, as to eggs: We have, within the past three weeks, bought 68 different lots of eggs in the City of Nashville. Of these forty-one lots were illegally sold.

Fresh eggs, of course, are those which are about in the same condition as when laid. Stale eggs are eggs which have begun to change towards decomposition. Cold-storage eggs are eggs which have been gathered during the laying season and kept refrigerated until winter, when the general supply is less. Cold-storage eggs have lost the delicate flavor which fresh eggs have, but have not begun to decompose. They are, therefore, not

much sought after for boiling, etc. For most other cooking purposes they are quite as good as fresh eggs, but much cheaper, and the prejudice which exists against them is quite unreasonable. Stale eggs may be classed for many uses with storage eggs, though nothing like so good—for a stale egg which gets a few days more age on it becomes a rotten egg.

Now, for the reason that as yet there is no better method for judging eggs than the old-fashioned one called candling, and this "candling" does not distinguish between stale and storage eggs, food inspections distinguish only between fresh eggs and other eggs.

A large number of our illegal cases, perhaps the greatest proportion of them, were the substitution of storage eggs when fresh eggs were called for. But we also found many rotten eggs, and these mostly in cases which, upon investigation, proved to have been bought from farmers or peddlers, who in turn bought them from farmers or country merchants. This leads me also to speak of dirty eggs, which are always classed as seconds by dealers, and sell for several cents less per dozen. These facts, and the generally unsatisfactory methods of handling eggs in this State, have given to Tennessee eggs a bad reputation in the principal markets of the country, and they sell for very much less in the East than eggs from the Western or Middle-Western States, or even from our neighboring State of Kentucky.

All this is not as it ought to be. Our people are as intelligent as any in the United States, and as capable of making a fine grade of produce, and the farmers of the State, and their wives, owe it to themselves to remove this stigma from their poultry-yards. Farmers should market their eggs at least weekly, because in the ordinary course of trade it takes eggs several days to reach the consumer, and an egg over thirty days' old is usually a stale egg. All nests should be stripped of eggs daily, and unless much care is taken it is desirable to candle all eggs sold in order to make sure that no bad ones get in. Further, the dirty eggs (and you will, with the best of care, have some dirty ones) should be separated from the clean ones, and sold separately, for one or two bad eggs will ruin the sale of a whole dozen of clean ones. These precautions are particu-

larly desirable where you market direct to consumers—in fact, they will help you to get direct customers, particularly when we get, as we are sure to get soon, a parcels post, which will enable you to market your produce direct, and in any event, you will be raising the general grade and price of these products in the State, and, last of all, be complying strictly with those pure-food laws which have done so much for all of us.

It does not seem to be very well known that the Federal government maintains here in Nashville a laboratory for the study of questions connected with the marketing of poultry, and I want to ask you to consult the efficient gentleman in charge for further information on any question connected with this subject. He is doing all he can to help you. His name is H. C. Pierce, and the laboratory is at the Naive-Spillers warehouse on Harrison Street.

The Southern Poultry and Egg-shippers Association, J. J. Naive, Secretary, Nashville, is also earnestly striving to raise the grade of all poultry products sold in Tennessee, and I would suggest co-operation, both as individuals and, as an organization, with them, because it is only by the co-operation of earnest men in sincere efforts for betterment, that undesirable conditions can be remedied.

Country butter is supposed to be pure and full-weight. It is, however, I regret to say, not always pure, and it is very often under-weight. The impurity consists of too much water. Butter is, by law, not allowed to contain more than sixteen per cent of water, but we have often found it containing more. Much more often it is short weight.

Out of 67 one-pound lots bought in Nashville recently we found the majority deficient in weight, and they weighed all the way from $12\frac{1}{2}$ to 17 ounces. This is usually not the fault of the buttermaker. The average farm dairyman buys a so-called one-pound butter-mould which rarely holds so much. A good deal, too, depends upon the way the butter is packed in the mould. It is, of course, safest to weigh the butter as moulded, and if there are as many pieces over as under a pound you are safe, provided the individual variation is not too great, for of course you will rarely be able to make an exact pound. And unless

you weigh your prints, you will have to make them so much over-weight that your loss will be considerable.

While I am on my feet, I want to bring to your attention those Acts as to weights of measures of products of farm, garden and orchard, which were passed in 1887 and 1895. These Acts were passed, of course, to prevent confusion in buying and selling, and the substitution of inferior, light-weight products. Thus a bushel of potatoes must weigh 60 pounds, of apples 50 pounds, etc.

Practically everything the farmer sells is covered by these laws; we have a great many violations of them by dealers, and I want to ask your co-operation with this office, in helping to get the consumer educated to buying and selling only by weight, and so helping at once to reduce the cost of living to the consumer and raising the price of the farmers' products. Paradoxical though this seems, it is nevertheless true, for it is the middleman who derives all the benefit from any irregular method of trading.

The laws to which I have referred are Chapter 240, Acts of 1887, and Chapter 143, Acts of 1895. The first of these contains the list of substances, measures of which have, by law, certain weights, and you can get copies of them from the Commissioner of Agriculture.

HOG INDUSTRY IN TENNESSEE.

J. D. B. DeBow was then introduced and addressed the Convention as follows:

It is always a pleasure to me to talk about hogs, and right here in the beginning I want to say that the hog is the most neglected and abused animal on the farm. However, he has proven to be the mortgage-lifter, and that without being given any attention whatever. A great per cent of the pork we consume comes from the Middle West, but for hog raising there is no country that could equal Tennessee. We have everything necessary for the feeding and sustenance of the hog, and I cannot understand why more attention is not given to this industry.

In the North, hogs are fed and housed and given the same care as we give our horses, and yet the raisers make it profitable.

Hog raising is the oldest profession in the world, originating 3,000 years before Christ. As a profitable investment there is no industry that can compare with it. A hog is more valuable at five cents than a steer at ten. Whatever you do, select and establish a pure breed of hogs and never attempt to cross your breed with any other kind. Adopt the breed you want to raise and get your whole herd from one man who has established his type of hog.

ELECTION OF OFFICERS.

The Convention then went into the election of officers for the ensuing year.

Sam N. Warren, of Spring Hill, was re-elected President.

Henry Clark, of Bedford County, was re-elected Vice-President.

Robert Gallagher, of Bedford County, was re-elected Secretary.

RESOLUTIONS ADOPTED.

President Warren then announced that the Committee on Resolutions was ready to report, and asked all delegates to remain and give close attention while the report was read. The resolutions were unanimously adopted without debate, as follows:

To the Members of the Middle Tennessee Farmers' Institute in Convention Assembled:

Your Committee on Resolutions unanimously reports:

1. We believe that this Convention of the farmers of Middle Tennessee indicates the continued and increasing interest the farmers of this section have in improved and scientific methods in agriculture, and that the large attendance at the sessions and the close attention manifested augurs well for the agricultural interests of the State.

2. The Farmers' Institutes have proved a powerful factor in developing a more scientific and economical husbandry, and their benefit within and without the State has been generally recognized and appreciated, and they merit a continuance of the liberal support heretofore accorded them by the State.

3. That we heartily indorse the plan of work mapped out and now being executed by Capt. Thos. F. Peck, Commissioner of Agriculture, and his efficient force, and we specifically indorse the proposal to establish county demonstration farms throughout the State, that the valuable work of the experiment stations may be brought into convenient reach of the farmers of each county. We commend the operation of the agricultural demonstration train throughout East Tennessee during October and November, and the proposed operation of a train of the same character through the counties of Middle and West Tennessee next summer.

4. We indorse the work of the Immigration Bureau of Tennessee, operating under the direction of the Commissioner of Agriculture, in the effort to advertise the resources of the State and bring desirable immigrants to live amongst us, and earnestly recommend that the next General Assembly make an adequate appropriation for the conduct of this work.

5. We commend Gov. B. W. Hooper for his selection of so efficient and capable a man as Capt. T. F. Peck for the important position of Commissioner of Agriculture.

6. Realizing that the Tennessee State Fair is one of the most beneficial influences in behalf of the farming interests of our State, the Middle Tennessee Farmers' Institute hereby indorses that institution and earnestly recommends that the next General Assembly make an appropriation sufficient to pay all deficiencies in premiums.

7. Realizing that good farming and good roads are close akin, and believing that a decided stand taken by the farmers of Tennessee in favor of good roads will bring forth results, we heartily indorse every movement inaugurated in this State looking to the betterment of road conditions. We recommend the movement to build a highway from Memphis to Bristol, and urge upon the counties through which it is to pass to build

as speedily as possible their section of the highway. We favor a general good roads law for the State and urge the election of members of the next General Assembly favorable to good roads legislation.

8. We favor the establishment of the "parcels post" system in the United States as a proper enlargement of the rural free delivery service of the post-office department, and it is hereby approved and commended to the favorable consideration of Tennessee's representatives in the Congress of the United States.

9. Realizing the need of more money to aid in the work of the Farmers' Institute in Tennessee, we recommend that hereafter each delegate to the institute deposit \$1 when his certificate is validated by the Secretary of the Institute for return, and that this fund be used for the publication of the proceedings of the Institute, and any surplus to be used for institute work.

10. We most heartily indorse the establishment of the home-making section of the Farmers' Institute of Middle Tennessee and recommend that this work be continued and enlarged, and that arrangements be made with the railroads, if possible, whereby farmers' wives and daughters may attend the Institute through arrangements with the railroads on free transportation.

11. We most heartily thank the railroads for the courtesies shown the delegates to the Institute, through Col. Robert Gates, and also thank Col. Gates for his admirable address read before the Institute, "The Farmer the Conservative Force in the Body Politic," and recommend that his address be published.

12. We most heartily indorse the work of the Corn Club boys in Tennessee, and commend the magnificent exhibit at this Institute as illustrative of what can be done on Tennessee land by proper and scientific cultivation. We indorse the work of Frank D. Fuller, of the United States Department of Agriculture, in the development and extension of the Boys' Corn Club work in Tennessee, and recommend that this work be instituted in every county in the State.

13. As a body of farmers and citizens of the State, we rejoice in the great moral advancement in our State and nation, in the abolition of the open saloon, and we do hereby most

heartily indorse the laws of this State on the liquor question, and recommend that they be retained on the statute books of the State, and we insist upon their enforcement by the authorities in the cities of the State, and to this end we recommend that the next General Assembly take such steps as will bring about their enforcement.

14. We heartily indorse the stand of Gov. B. W. Hooper in favor of law enforcement and the abolition of the sale of liquor in the State.

15. We appreciate the splendid program arranged for this Institute, and heartily thank those taking part in it. The addresses were interesting and instructive, and will further the agricultural interests of Tennessee.

16. The thanks of this Institute are hereby extended to President Sam N. Warren and Secretary Robert Gallagher for the painstaking and impartial discharge of their duties; to the press of Nashville for their courtesies and admirable reports of the proceedings of the sessions; to Supt. George Renfro, for his preparations for the care of the delegates, and to the people of Nashville for their kindly and courteous treatment of the thousands of delegates to the Convention.

HERVEY WHITFIELD, *Chairman*,
Montgomery County,
W. H. W. JAMES, Dickson County,
F. L. DODGE, Warren County,
W. N. RUDD, Warren County,
PAUL S. SEAVY, Lawrence County.

The Convention then adjourned till 2:00 o'clock, p.m.

AFTERNOON SESSION.

Convention called to order at 2:00 o'clock.

A motion was made that the Convention extend sympathy to Prof. Ewing Hite, of Gallatin, who was the victim of an unfortunate accident, having his arm cut off in a corn shredder, and was thereby prevented from being present. A rising vote was taken and the motion was carried by a unanimous vote.

THE REJUVENATION OF WORN-OUT SOILS.

Dr. George H. Ashley, State Geologist, was then introduced and addressed the Convention as follows:

It is a long time since Tennessee was a pioneer State. The first settlers have come, have seen, have conquered and have gone. In most of Middle Tennessee primitive forests are hardly more than a tradition. Some of the land thus conquered has been allowed to grow up into second growth timber, but the rest we have "cultivated" and far too often our cultivation has been on the order of the wolf cultivating the lamb. When we got through cultivating it there was nothing left.

One does not have to hire a buggy by the month to travel around Middle Tennessee to find lands cultivated in just that way. You can spot them a mile away, if there are not too many others between to hide the view. The fences are down or standing up through force of habit. There are weeds enough on a single farm to seed a county, shrubs and young trees are springing up all over the land. But you know the symptoms. I once knew a grocer's boy who came into a little money through the death of an aunt. He invested the money by buying out his employer. For a month all went well, the daily sales brought in enough to give the boy a fine time. His girl had daily rides and theater parties, but at the end of the month it dawned on him that you cannot run a grocery store without replenishing the stock. Alas, his money was all spent. How many of us farm on exactly the same principle as that on which the grocery boy ran his grocery? And to-day most of us are more or less in the condition of the grocery boy at the end of the month. While our crops were big we could easily have afforded to keep our lands up, but now that our crops are small we can barely get a living off the farm, let alone returning to it the elements of richness we have been taking from it.

But we in Middle Tennessee are not the only people who have ruthlessly robbed their soils. In every State of the Union people have been killing the hens that lay the golden eggs. So long as there were new lands to be had in the West they abandoned the old farms and went West. But the time has

come when the new lands of the West are about all taken up, and as a result there has been a great awakening and everybody has begun to talk conservation. It is the old story of the stolen horse and the barn door.

Well what are we going to do about it? If somebody would only leave us a little pot of money we might go to work and buy up a lot of fertilizer—complete fertilizer at \$20 a ton—and soon have our farm in fine shape; or we might conclude that this was a good time to shake the farm and go to live in the city.

But if you stop to think of it nobody put fertilizer on your land to give it its virgin richness. We are therefore led to ask three questions:

How did the virgin soil obtain its fertility?

How did cultivation rob it of its fertility?

Can its fertility be restored without the use of fertilizers?

I shall try to answer those three questions: To simplify our inquiry I shall confine myself to the soils overlying limestone rocks, as probably four-fifths of the farms of Middle Tennessee overlie limestone. As far as possible I shall avoid technical terms.

First, how did the virgin soil obtain its fertility?

In relation to plants, ordinary soil is sand or clay, in varying proportions and in varying degrees of fineness, mixed with certain compounds that contain nitrogen, phosphorus, lime and potash,—which, under certain conditions, may serve as food for plants,—and some other elements that need not concern us now.

If we examine a plant chemically we find it composed principally of carbon and water; but if we burn such a plant there is left the ash, that contains larger or smaller percentages of silica, potash, soda, lime, alumina, chlorine, magnesia, iron oxide and some other compounds. Now probably four-fifths of Middle Tennessee is underlain by limestones, and if we analyze those limestones we find on the average not more than 85 per cent calcite and about 15 per cent impurities, which include silicate of alumina, or clay, or magnesium, potassium

and sodium, oxides of iron, etc. Comparing these analyses with the analyses of the soils above, there will be found practically the same list of elements, but now the calcite is essentially all gone, and only the impurities remain, though not quite in the same proportion as before, for the same causes that removed the calcite have also acted in a greater or less degree on the accompanying substances.

If we remember that ordinary rain water will dissolve calcite, and especially that if it contains carbonic acid it will dissolve the calcite fifty times as fast as pure rain water, it is evident that it is only necessary to go to the limestone as the source of the fertile elements of the soil as well as of the soil itself.

But how has the limestone changed into soil?

If you will go out into an old forest and dig a pit, you will observe first that the top foot or so is a black earth. At the top it is clearly only leaf mold and masses of partly decayed leaves. Lower down the leaf structure disappears and only a fine, mealy earth is seen, the ash of the plants that had grown there, left by their slow oxidation or decay. Then comes a foot or more of soil with an abundance of vegetable matter derived from the roots of the plants. Then comes the subsoil, more compact, with less vegetable matter, with an increasing amount of partial weathered rock fragments from top to bottom. These are very small at the top, but get larger further down until finally fairly solid rock is reached. The line between the soil and subsoil is not always distinct, because roots, as well as ants, worms and other animals burrow down from one to the other, and the upturning of trees in times past has raised the subsoil and decayed rock to the surface.

Now every time it rains the water soaks down through the mass of decaying vegetation taking up large quantities of carbonic acid in addition to that already obtained from the atmosphere, and as it continues downward it carries more or less oxygen and a number of acids derived from the decaying vegetation, humic acid, etc. Armed with these acids and the oxygen it tends to dissolve or change the calcite and other materials of the limestones. As it works its way down into the subsoil it attacks all of the minute particles of partially weathered

rock, weathering them more, and when it gets down into all of the joints or crevices of the limestone, it dissolves the rock either side of its pathway, widening the crevices and cutting the solid limestone into blocks that ultimately become the small fragments of the subsoil.

But there is a limit to the depth the charged water can act, for as it acts on the particles of rock in the subsoil, it gives up its acids and oxygen and becomes charged with lime and iron and other substances, and flows away, either through channels in the rock or on top of the rock.

But the rain is not the only agent acting. The roots of trees and plants work their way down into the crevices of the rock and have a wonderful power in prying open those crevices, if the rock can give; but more than that the roots give off humic and other acids that are known to have definite powers of dissolving the rocks and especially of changing the composition of some of them from the insoluble to the soluble form.

Again, all of the burrowing animals from ants to ground hogs assist to an extent little suspected, in bringing particles of the rock up to the surface where they will weather more rapidly.

Under these agencies it is evident that the top of the limestone rock is constantly being dissolved and lowered as it is converted into soil and prepared for the growth of plants. Then remembering how the blanket of leaf mold and forest vegetation at the top protects the soil from washing away and there is no mystery in the fertility of the virgin soil, especially in a region underlain by rocks as rich in food elements as most of those in Middle Tennessee.

Now what happens when a man comes along, and, as he calls it, "cultivates" that land? First, he gets rid of all the vegetable matter on the surface he can, principally by burning. Then he plows it. Too often he uses a shallow plow, drawn by one horse, which turns up only a few inches at the surface. Unfortunately the plow is not like a spade. It has a foot and to raise and turn over the ground effected, it presses on and smears over the ground below, compacting it and in time affecting it so that neither the roots of the crops nor the rain penetrate it, making in other words the hardpan.

What is the result?

First, he has removed the deep rooting plants that go down to and enter the rock breaking it up and dissolving it. By the hardpan he has shut off the action of the shallower rooting plants except on the few inches of soil at the top.

Second, he has stopped the downward action of the rain water, and such as works its way through the hardpan has little carbonic or humic acids to work on the rock when it is reached.

Third, he has driven away most of the burrowing animals and broken up their burrows.

Fourth, the rain water not being able longer to soak down deep into the ground soon fills up the top few inches, reducing them to a mush that not only tends to rapidly wash away if on a slope, but too often the water has time to dissolve and carry away the valuable ingredients of the soil.

Especially with the cultivated crops like corn and cotton the protecting blanket of plants or leaf mold has been removed, exposing the surface to constant erosion.

Sixth, too often he raises the same crop on the same ground year after year, which year after year demands its heavy toll of the same elements, passing by all others.

Under these conditions is it any wonder that in time he comes to look with dismay on his gradually decreasing crops? He has locked up the source of the soil's fertility below, while exhausting that fertility above.

Well, what can he do about it?

First, if he has any land that cannot be cultivated without washing, put in into pasture or timber.

Second, plow deep. Break up that hardpan, if it takes dynamite.

Third, tile under-drain every acre. There is nothing better than tiling to loosen up the subsoil and admit water and air to it.

Fourth, rotate crops

Fifth, turn under green crops. Turning under any crop will furnish carbonic acid and humic acid to the descending water, and the legumes, clovers, alfalfas, etc., will supply the

soil with the bacteria that secure the soluble nitrates. This may be all that is necessary to restore the fertility of the land. If not add manure, lime or phosphate rock, as may be found necessary. Remember that all of the elements of the soil's original fertility in boundless abundance is lying in the sub-soil and in the rock only waiting to be drawn on.

Worn out soil!

What would you think of the merchant, who quits business because he has run out of stationery? Yet we quit farming because, as we say, our lands are "worn out."

The time is rapidly passing when we can make a living out of nature as we find it. There are still some tracts of primeval timber, there are still patches of wild berries, and there is a little game. But how long would our civilization last if we were again to depend on wild game, wild fruit and wild grain for our food? That was well enough in pioneer days. What would we think of a farmer who refused to buy seed or cattle for his farm, but depended on what he could gather without cultivation? Yet, isn't that the way we treat our soils?

Has not the time come when we must replenish the plant food in our soils as regularly and systematically as we reseed year after year, remembering that in most cases plant food in abundance is just underlying our soils?

Out here in Dickson County the other day I heard of a man who, in three years, without fertilizers, raised the average yield of wheat on his farm from six bushels per acre to 26 bushels per acre. A neighbor of his using manure, in addition to plowing under green crops, raised his corn crop in the same time from three to four barrels of corn to 15 barrels of corn.

Just imagine where Tennessee will stand as an agricultural State, with her naturally rich soils, when every acre of worn out land is brought under that kind of cultivation.

The Chairman of the Committee of Resolutions announced that in presenting the report of the Committee to the Convention the following matter was inadvertently omitted:

"Whereas, The law provides that the President of the Farmers' Institute of each division of the State

shall be a member of the Board of Trustees of the State Fair Association, therefore,

“Resolved, That this body heartily endorse Mr. Sam N. Warren, President of this Institute, as a member of said Board.”

On motion this section of the report was adopted.

On motion the Convention then adjourned to meet in Nashville in December, 1912.

PROCEEDINGS
OF THE
Middle Tennessee Home-Makers'
Association

DECEMBER 5, 6, 7, 1911.

FIRST DAY—TUESDAY, DECEMBER 5, 1911.

AFTERNOON SESSION.

The opening session of the Tennessee Home-Makers' Association was held Tuesday afternoon in the Assembly Room of the Hermitage Hotel, at 2:00 o'clock, with Miss Virginia Pearl Moore presiding and Mrs. Sarah Alexander, Secretary.

Capt. T. F. Peck, Commissioner of Agriculture, delivered the Address of Welcome.

HOUSEHOLD EFFICIENCY.

Miss Catharine A. Mulligan, Dean of Woman's Department, University of Tennessee, Knoxville, delivered the following address:

Training for industrial efficiency is sure to be the motive force behind much of the educational organization of the future, and the greatest subject now before the business world is the new science of efficiency. The methods of work applied to factories, to railroads, to the work of the day laborer in every branch of industry have not only increased the amount of work accomplished by each group of individuals, thus increasing wages, but have left the workers less fatigued at the end of the day.

Why not apply some of these improved shop methods in the firm of Husband, Wife & Co.? This is a co-operative organization which depends for success upon thorough organization of the woman's work as well as the man's, for eighty per cent of the income is spent for a living in families whose incomes range from \$1,500 to \$2,000 and that income can be increased just as truly by decreasing the expenditures as by raising the man's income.

It is true that of the two great divisions of economics—production and consumption—more emphasis has been placed on the former, pointing out how a larger degree of efficiency may be attained in producing wealth. And it is only in recent years that the conviction has been growing among economists that the use made of money after it has been acquired is of equal importance.

The woman spends for the family the larger part of the income. For foodstuffs alone \$7,000,000,000 are spent each year in this country. Surely it is worth while to consider for a short time the wise spending of the money, time, and energy of the family.

The profession of housekeeping is the most backward enterprise in this country. The census report does not even consider the vast army of housewives as having an occupation nor are they wage-earning, yet the average woman is pretty sure after marriage of a "good steady job and board and clothes" and the woman who has to be called in to fill her place if she dies is included among the wage earners.

In order to spend better one must have a standard of living. First of all distinguish between wants and needs. Through failure here the majority of people spend two-thirds of the income for what fails to buy the best results in health and happiness.

And right here I want to emphasize the necessity of every member of the family living up to the same standard; taking share and share alike, the pleasures or privations that come in the family life. "Team work" is one of the phrases heard often in scientific shop management and the home is the best place to begin its practice.

We cannot know whether we are holding to a standard unless we keep accurate account of the income and the expenditure, carefully planning beforehand what can be afforded for each expense. In a book dealing with this subject of household management the following budgets are given as to the typical and ideal divisions of the income of \$1,000 for a family of five people.

	<i>Food</i>	<i>Rent</i>	<i>Operating Expenses</i>	<i>Clothing</i>	<i>Higher Life</i>
Typical....	20%	19%	16%	15%	20%
Ideal.....	30%	20%	10%	15%	25%

Figure out for yourself how much this means for each person for a month—for the day.

To be efficient the family must be well fed. The \$200 may be spent for foods that fail to nourish the body, but with thought and study the housewife finds that she can get the best return for her money when it is invested in cereals, corn, wheat and rice, in beans, eggs, milk, and fruits. All these can be produced on the farm. Just here is our most forceful reason for diversified crops. Raise there not only the food for the cattle, but still better, the food for that best of all crops on the farm—the children.

The progressive farmer knows he has the agricultural department of his own State and at Washington ready to furnish him with information about his work, just so these departments will furnish the farmer's wife with bulletins free of charge upon all subjects related to her work—food, house-construction, and sanitation.

Next to food perhaps clothing occupies the place of importance in the housewife's attention. When the cotton and flax were raised and woven at home, honest cloth was manufactured and in the days of our grandmothers silk could be bought that was really made by silkworms, but now wool is adulterated with cotton and with shoddy, and silk is so heavily loaded that its weight is increased three or four hundred per cent and its lasting qualities decreased in proportion.

A woman must know how to distinguish the inferior article and avoid it. The salesman's word is not sufficient. There are many chemical tests that are simple and as each textile has

its characteristics we may detect adulterations without the aid of a laboratory.

Cotton, being cheap, is not often adulterated, but the starch gum or glue added in the finishing may give body to the cloth. This gives the material a harshness and often shows between the threads when the cloth is held to the light. Mercerized cotton may have a silky luster that is temporary or permanent, the latter is obtained by the action of a strong alkali on cotton rinsed under pressure.

Linen, when adulterated with cotton, has a fuzzy look; when treated with oil the linen threads are more transparent than the cotton. Then, too, linen has a leathery feel.

Wool has a luster and kinks. It burns slowly, chars and smells, like burning feathers. When mixed with cotton it burns more rapidly and leaves little ash.

Silk, when weighted, burns, leaving the ash in the shape of the cloth consumed.

Not only must the efficient woman know how to test her materials for adulteration, but also the weakness of fiber due to processes of manufacture, such as bleaching, dyeing, and finishing. She must judge what colors and weaves are suitable for each garment and what is good taste for every occasion, and for each one of her family. The less money a woman has to spend the more care she needs to exercise in her choice.

And again we too often neglect the hygienic properties of the materials. That next the skin should absorb moisture—wool and silk are best, but the loosely woven cotton undergarments accomplish this at much less cost.

When educated women demand better quality in materials, the manufacturers will furnish them, but a pure textile law must do for cloth what the pure food laws have done for food.

We feed and clothe the body, but too often neglect to keep it in good health. Too many women are willing to just be able to be about. The work accumulates, the housewife is not fit physically, and everything is at sixes and sevens. Women need not get old and bent and worn if they will learn to care for their bodies by learning three very simple things—how to stand, how to walk, and how to rest.

The backbone should be in position, the chest up, the abdomen in, and head up. Let the legs do the walking, not the whole body. Do not hurry with your whole body and worry in your mind till the goal is reached.

Make each task—sweeping or stooping or washing a help and not a hindrance to bodily perfection.

Then as often as possible relax, shut the eyes, let the muscles get limp, sit quiet or lie down.

To be more efficient in the home, the house must be well planned. We cannot all build new houses, but we can improve on what we have. Have a window cut where light is needed. Make a door between two rooms so that steps will be saved, have a stool to sit on at your work, put a clock in the kitchen, have the wood stored on a level with the kitchen, rearrange the furniture so as to save steps, have a sink to carry away waste, even if you cannot have a water supply, and most of all plan each task so as to save motions.

Then give each person in the family his share of the housework, making him feel that he is helping in team work for the good of the family.

Only then can the housewife be an efficient worker, for to make ten people work is better than to do the work of ten people.

HOME CONVENIENCES.

Mrs. J. Taylor Stratton, of Madison, Tenn., was then introduced and read the following paper:

A boy working along industriously with his broken hoe was heard to say: "I am going to have a garden if I aint got much of a hoe." Now that was a fine, plucky spirit, and such a boy deserves a new hoe, the best on the market. This little story characterizes the state of mind of the great majority of good housekeepers and good cooks throughout the country. With poor tools and few of them they are pluckily tackling the job of feeding the nation. The workman is worthy of his tools and we all know that the worker with good tools has a great advantage.

That the problems of millions of housewives are demanding more attention each year and that housekeeping is being recognized as a definite science, is shown by the fact that the schools and colleges all over the country are adding courses in domestic science and home economics. Not only are our daughters learning to make better housekeepers in the future, but the present-day housekeeper, the woman who already presides over a home, is taking advantage of it and if she is unable to leave home she may receive lessons by mail from schools which are leading the way in practical education. When a great many people want the same thing some fertile brain is sure to produce it.

Millions of housekeepers are dissatisfied with the old way of doing things and desire to learn ways and means whereby they may save time and money and labor. Since the advanced cost of living has become such a vital issue in so many homes many have dispensed with servants and it is no longer the servant problem that worries them, but the servantless problem confronts a great number of American housekeepers of the present day and they ask themselves how can we best get along without a servant. I answer by the use of labor-saving devices and conveniences in the home. This applies to the country as well as the city housekeeper.

In trying to solve the servantless problem we are going to have a domestic administration less laborious, more scientific, efficient and economical than that of the present day. The house work is being planned so that everything may be done with the least labor and in the shortest time, thereby conserving our strength and affording us time for outside pleasures and duties. I will tell you how one woman solved the servantless question: she was paying her servant three dollars a week and two dollars for her board was a low estimate, and doing more than half the work herself with but few conveniences in her home. She dismissed the servant, borrowed two hundred dollars from the bank at six per cent interest and invested it in labor-saving devices for the home. At the end of the year she paid back the money with interest and had fifteen dollars to her credit. She had the many conveniences left and was happy in doing her own house work.

This is a business proposition and you farmers' wives would be as justified in doing this as your husband is in buying a wheat binder on three September payments. This is indeed an age of wonderful inventions and if some of the grandmothers could return and see the conveniences of the home of to-day they would be speechless in astonishment. The vacuum cleaner, now so simplified that a child can clean the carpet and rugs, first made its appearance about three years ago and there are now about one hundred and fifty makes on the market and one inventor has said that it is yet hardly out of its swaddling clothes. The electric vacuum cleaners are better, because they have more power. They have many attachments for doing other things beside cleaning the floors and walls. They even massage the face. Ladies, they not only give you a clean house, but make you beautiful also. The fresh-air furnaces of to-day are not only labor-savers, but are very healthful, too. In the kitchen we find that the over-worked woman's cry for help has been answered by the invention of so many labor-saving devices. I do not mean to say that all inventions are good, for we have constantly before us the pathetic procession of small manufacturers of household utensils who to-day are full of hope with visions of fame and fortune and to-morrow are disappointed and bankrupt. Why? Because their inventions are not practical.

It cannot be estimated in dollars and cents what has been saved for the breadwinner of the family by the little food-chopper that clamps on the kitchen table and I no longer believe that the French people can boast that they can live on what the American housekeeper throws away. The kitchen cabinet saves miles of walking to the housewife with a whole store-room before her as she sets in her high chair to prepare the meals. The bread-mixer is a great labor-saver and every woman who bakes her own bread should have one. I will not say much about the fireless-cooker, as we are to have a demonstration of it to-morrow, but permit me to say that a good one is all that is claimed for it. One woman said it had solved the servantless problem, but if it has not done that it has shown us that it is no longer necessary for a woman to stay away from Sabbath-school and service to prepare a hot dinner for her family. Put

the dinner in the fireless-cooker and when you return from service with your soul refreshed with a message from above you will find a hot, well-cooked dinner ready for you. The fireless-cooker is the greatest labor and money saver we have in the kitchen. In the laundry we have many helpful inventions. The washing machine with the motor which runs the washer and wringer at the same time and the self-heating irons are great labor and time-savers. I know families who a few years ago would have scorned the idea of doing the laundry work, but to-day with the labor savers they have the clothes all on the line early in the day and it is no longer a woman-killer.

Time forbids me mentioning more of the many conveniences, some of which may be purchased for five or ten cents, but ladies, let me beg you to save your energy by the use of these and many more in your home. Do not expend all your strength in housework, but save some for the outside duties which confront you and the pleasures which you should enjoy. I ask especially ladies on the farm to have these conveniences, for your burdens are heavy and you, above all others, should have them. I have never yet seen the treasury too low to buy the sulky plow or the needed implement on the farm. Does not the wife, the mother, deserve more, for "man's work is from sun to sun, but woman's work is never done," and long after father and children are in dreamland the mother sits stitching away on clothes for the little ones. Ladies, let us take care of these bodies, for they are the temples of the Holy Ghost and the vehicles of the soul and we shall have to account for the care we have given them.

Prof. Thomas A. Early, of Memphis, who has charge of the Boys' Corn Club, spoke chiefly on the Girls' Tomato Clubs, and said they were to the girls what the boys' corn clubs were to the boys. They were for the purpose of interesting the girls in gardening, so by the time they became housewives they would know how to raise and can vegetables, in order that their tables could be supplied with fresh or nicely canned vegetables at all seasons of the year.

Mr. Early spoke of the success with which these clubs were

meeting in every section where they had been organized. Each girl is asked to raise a tenth of an acre in tomatoes. These tomatoes some of the girls sell at good prices, and those they do not sell they are taught to can by the most improved methods, and sell at better prices.

Miss Mary Arthur, of Nashville, Dean of Domestic Science of the Middle Tennessee Normal, gave a brief talk on the instruction in the Domestic Science Department in the Tennessee Normal and extended the body an invitation to visit this department.

At the close of the session an informal reception was held in the Assembly Room by the ladies present.

SECOND DAY—WEDNESDAY, DECEMBER 6, 1911.

MORNING SESSION

The second day's session convened in the Assembly Room of the Hotel Hermitage at 9:30 o'clock with Miss Virginia Pearl Moore presiding.

Miss Catharine A. Mulligan, Dean of the Domestic Science Department of the University of Tennessee, Knoxville, gave a demonstration of the Fireless Cooker. Soups, roast, chicken and other things were prepared in the cooker, giving a practical test of the efficiency of this labor-saving invention.

This demonstration was followed by an open discussion, in which a number of ladies testified to the success and benefits derived by the use of the fireless cooker.

Prof. D. Moore Andrews, of Wartrace, Tenn., addressed the Association on "Convenient Arrangement for the Kitchen." He gave a blackboard illustration of a perfectly arranged kitchen, including some practical arrangements for keeping out the kitchen enemies, such as flies, roaches, mice and ants. Mr. Andrews said it was not so much the expensive equipment of the kitchen in the way of utensils, but the arrangement of the kitchen articles, that made them convenient and labor-saving in steps.

Following this talk by Prof. Andrews there was an open discussion on new ideas and plans for convenience in the kitchen.

The morning session was closed by an amusing dialogue by Mrs. J. A. Reagan and Mrs. C. O. Browder, of Sweetwater, on "The Ideal Country Home and How the Other Half Lives."

AFTERNOON SESSION.

Mrs. Robert W. Nichol, of Nashville, had the first paper on the afternoon program.

HOW TO MAKE THE FARMER'S HOME
MORE COMFORTABLE.

Mrs. Nichol addressed the Association as follows:

Emerson, in an address before an Agricultural Society, of which he was a member once, spoke eloquently of the "large and noble" occupation of the men who till the soil, and told how, in the Roman days, a man who by his valor saved an army, was given a crown of grass as highest distinction.

Emerson thought that the Arval Crown (or crown of grass) should be given to the *tillers of the soil, for the lives of the whole world* depended upon *their efforts*; and likened the planting of one potato, that in six weeks would produce ten, to the miracle of the multiplication of the loaves.

And this is true in part; but since the beginning, a wise Creator has ordained that the production of the *ten* from *one*, depended upon the knowledge of the *preparation* of the soil, the *time* of planting and of garnering; and that the *yield* might bring its *increase*, *care* in *storing* must be considered if for family use—or market values watched if commercial cents and dollars were to be added to the credit side of life's balance. And thus it is with the farmer. His is the never-ending conflict with the elements of nature. Rain, sun, shadow and drouth, smile or frown upon his labors. There's constant war upon insect blight; epidemics of disease ravage his flocks and herds; unskilled and untrustworthy labor means loss of crops and sale; and the rise and fall of fluctuating stock markets make or mar him whether he plants *in ground or in theory*.

But in the end the farmer wins in his conflict with nature—against insect blight—against ravages of disease.

He overcomes unskilled labor by labor-saving implements. If by deeper plowing and more careful fertilizing *one year* he

doubles his crop, he will continue to plow deep and fertilize the succeeding year.

He will be satisfied with a normal, safe balance in sales, and not depend upon the excitement of *gain without labor*, that is the true estimate of the *broker's marginal quotations*.

Hence the farmer is the arbiter of commerce, trade and traffic. His forests furnish houses, and ships that sail the seas to carry and bring an exchange of merchandise; his cotton and wool furnish fabrics; his fruits, vegetables, grains and grasses, food and beauty; his animals, service; and his minerals, comfort.

Some of the characteristics of the farmer should be as follows:

He must be *sound in judgment; clear in reasoning; careful in investments; honest in dealing; industrious in undertakings; unlimited in energies, and patient for results.*

He should have a strong physical body, a judicious mind and a pure heart. Tenderness toward his family; justice toward his servitors; and as it is said by scientists that a man is the product of the *kind of home he lives in*, the farmer's home should be a place of rest, where he may gain health and strength of mind and body. Beauty and utility should go hand-in-hand and every comfort that a *careful division of income* can provide, should be his.

In this progressive day when public schools, universities and colleges have their Chairs of Home Economics, and it is a part of the educational course from Grammar Department to University Degree, it is the duty of wife and daughter to supplement every effort of the farmer to provide for "more healthy, happy, intelligent and economic home life."

As this article is to deal with "How to make the Farmer's Home more Comfortable," I shall treat of the items of the house that he is most closely associated with, *his individual comfort* being the consideration.

The farmer's home should be planned with special *reference to his income*, remembering that "A *house* is built of *sticks and stones*, a *home* is built of *hearts*."

There should be *construction with light and ventilation first*

considered, and then careful arrangement of rooms, that labor may be minimized for the housekeeper.

After we have housed the farmer the second consideration must be the health of himself and family. The cellar is considered the "reservoir of air" of the house, and if there *is one, everything* must be done to keep it sanitary. The largest per cent of cellar-air goes into the first floor, and correspondingly less in each higher story.

If the cellar is for furnace or storage, it must be well-lighted and ventilated. The floor preferably cement, as there has been found much danger in soil-pollution from which poisonous gases are generated. The danger of soil-pollution is greatest, if lot upon which you build is in part of city that has been filled in, or where any refuse has been thrown. In country keep cellar windows open daily. Keep walls whitewashed, and buckets or pans of charcoal or unslaked lime in corners of cellar to sweeten air.

If cellar is large enough and light enough it can be used as laundry room in rainy weather—though the out-of-door wash-room beneath the trees, the great kettle bubbling and boiling, the long lines of white garments hanging where the sunshine bleaches every blemish to snowy whiteness, and where the cooler shade saves fading in color fabrics, is the ideal laundry, the weather permitting.

Personally I would prefer a kitchen about 14 feet square for a country kitchen. It should have hanging shelves that can be taken down and wiped. There should be closed cabinets for cooking vessels, containing both hooks and shelves. The floor should have some covering, as linoleum; even if not all over the floor there should be strips of easily cleaned covering, for the condition of the *kitchen floor* is an *ever-present duty*; and every labor-saving device that can be provided for lightening the culinary work is a wise expenditure. Drain pipes can be easily put in by the hired man; but they must be *constantly and vigilantly cared for and looked after by the housewife*, and antiseptic solutions freely used. The ventilation of the kitchen must be *continual*. A roomy, light pantry, with carefully stocked shelves of fruits, jellies, preserves, pickles and canned goods, with bins

for vegetables in larger quantities than the city housewife, who buys for daily consumption, could understand, will add to the comfort and convenience of all. I am a great advocate for comfortable chairs in the kitchen, and have had many hours of labor made more comfortable by my little, low rocker. If a latticed porch be just outside the kitchen, much of the preparation of the vegetable dinner, canning, preserving, etc., can be done in the cool air; and for a few cents, vines, and the beautiful blooms of morning glory and evening glory will run in a riot of color over it all, and will delight the eye.

The dining room I would have large and well lighted. In this room the family *as a whole* meet oftenest and spend a greater amount of time in social intercourse. Meals should be served at *regular hours*, and the entire tenor of the farmer's day *depends upon* the early breakfast.

Growing plants should add their decorative value. Special care should be given china, glass and linen in daily use, that the element of exquisite neatness may add a charm of its own.

The daily routine of three meals a day for the 365 consecutive days is a consideration that tests the domestic attainments of the housekeeper, and the appetite and digestion of the farmer.

The housekeeper must study a *well-balanced menu*. The proper food in the proper season. Milk and butter must *be pure*. The PRIZE PULLETS and cockerels *must not be served en casserole*, nor *the lamb that has been marked for exhibition in State Fair* served in its caper sauce. But when care and tact have been used in selecting the products from farm and garden, let them be served in wholesome dishes and in a variety of ways. Let the prosaic potato appear in jackets and out of jackets, in cream, in salad, and in pies.

Let the spray of mint from the branch add a piquancy to his iced-tea in summer time.

Let him know that his family takes pride in his "mammoth pumpkins, golden squash, silver onions, scarlet peppers, pink carrots, blood-red tomatoes, purple beets and all the gay company of his superior raising," and he will feel an inspiration as he rises from his family board that will send him forth to the day's duty with a genial warmth in his heart and soul. He is providing for

his own, and they would aid him all they could by pride in his success, and tender ministry to his comfort.

If there are children in the household, *promptness to meals* should be an inviolable rule. And remember also the cordial welcome that must always await the farmer's sudden guest. *This*, with the decoration of a single rose with its spray of green leaves from the *one rose bush*, or a dish of fruit from your own fruit tree, will have an ethical value of beauty all its own.

The farmer's bedrooms I should locate on the side of the house with windows (side or back) facing barn and outhouses, where the hands could be seen as they come to arrange for the early day's work. His room should open upon a gallery that could be used for sleeping porch, if he wished it. There should be the fewest number of pieces of furniture used in the bedrooms. The mattresses for the bed should be the most comfortable that can be afforded. Simple, short curtains that can be easily laundered should hang at the window. Rugs should be used that can be easily removed. If lamps are used they should have daily care—be filled and trimmed, that there be good light and no odor of oil. A picture or two of wife, children and mother; a table with stationery, pens and ink; his farm journal and his Bible; an easy chair and a small closet for wearing apparel would fill his needs.

The bathroom should be located near his bedroom. In this day of convenience, when a water plant can be placed in a farmer's home at comparatively small expense, the bathroom is a possibility for farmers' families in even the most remote sections. The labor of installing a plant may much of it be done by the laborers themselves.

The water of his well can be carried by force pump into elevated tank if bathroom is in upper story. The room space beneath tank can be used for fuel or storage for vegetables.

The plumbing is not difficult, but care must be taken here, for waste pipes must be run into a septic tank and some distance from the dwelling. A card to the Government Department at Washington will bring bulletins containing the safest way of disposing of sewage—of constructing drains, and how to prevent soil-pollution. This correspondence may be done by wife and daughter, and the Government bulletin on Household Economics,

Pure Food and Drug Experiments, Flower Culture and Gardening may also be had for the asking, at the Department at Washington.

If the force pump is too expensive a method for the bathroom then have a small room fitted up with large porcelain tub, a stove or heater for water and comfort in winter, straight drain pipes to a safe distance from premises, plenty of towels and pure soaps, for one luxury every woman should provide for in her care for the health and comfort of her family, is the bathroom.

By executive ability she can generally manage *the necessities*, and the bathroom is ONE.

The other apartment that I would arrange for the farmer's comfort, would be his office. This office should consist of a large room situated at the end of a circular pergola or covered walk that should lead from the side entrance of the dwelling; the office should also have an entrance from the side of the barns, etc.

All furniture should be strong and substantial. There should be bookcases for his agricultural and stock farm journals; catalogues of farm implements, etc.; some good general reading matter; desk with stationery and all conveniences for correspondence; table large enough for map-drawing or plans; comfortable chairs and couch for resting; some durable floor covering that could be easily kept in a sanitary condition; a closet for extra coats, rubber boots, shoes, umbrellas, hunting togs, guns, fishing outfit, etc.

I would take much pride in his business office, and would try to get him to observe regular business hours where he could dispatch the work of the farm, interview his workmen, do his clerical work and fill business engagements. An office of this kind is invaluable on rainy days when there could not be the freedom necessary in one's private home.

A second and larger room would open from this office that would serve as carpenter's shop or workroom, with lockers for small garden implements, tools, harness, etc.; and where, on rainy days, many stitches could be taken in time by the men who would be idle otherwise. These rainy days on the farm could be utilized to stop the leakage in many a farmer's income,

if harness was washed, oiled and hung up; tools sharpened, and repairing generally considered.

The living-rooms, as the syllabus suggested, should be an expression of community life and should contain things of interest to each member of the family. Here let relaxation take place. Let the farmer forget for a time the business of life. Let stocks, bonds, insurance, taxes, crop rotation and politics be relegated to to-morrow.

The wife and daughter can in this room be as artistic as they wish; but let it be consistent with perfect ventilation, neatness of arrangement, easily adjustable fabrics at windows, and harmonious colorings on walls and in rugs. The reading table—let's suggest it round, for there's an old adage "that guests about a round board can know no angles."

There should be plenty of light at night, for it is a well-known fact that the effect of insufficient light at night, if work or reading is to be done, is disastrous to sight and nervous systems.

Have favorite books, late magazines, the local or weekly paper at hand. Here again use the flowers in vases, and growing plants as ornaments, instead of grotesque pitchers, albums, dust-catching scarfs, unwashable sofa cushions and much-draped cosy corners. There should always be music. If not the piano, with the children playing and singing, then the *division of income* should provide for a Victrola and a few carefully selected records. The late best stories should be discussed by members of the family who have had more time than the farmer to read them.

Amuse him with anecdote, "for nothing can excel the *cohesive quality* of laughter." There should be more laughter in work, and men should be taught to extend their playtime into their life's labor, says Bachellus.

For the family's comfort, the windows and doors in the entire house should be screened; if not with wire netting, I have seen a *good, strong* bobinet used. This is a health necessity, and there must be protection from the poisonous and germ-disseminating fly and mosquito. All weeds, rank grasses, and decaying vegetable plants must be destroyed, as they make the air about the house and vicinity miasmic.

We would make the farmer's home more comfortable then—by a *careful division* and *expenditure* of his *income*; by a hygienic, economic and attractive home; by wholesome diet; by appreciating and aiding him in his life's vocation; by making him share the beauty and convenience he is giving his life, his strength, his mind, his substance to provide for others.

And by this co-operation of wife and daughter the farmer will know himself a king in his own realm; for life's riches will be measured by the number of things loved, not by the number of things possessed. We will have comfort for his body, put beauty in his mind, and joy in his soul.

And the glint of the gold that is his life's-wage we will make all-sufficient, for we will share in his losses as well as his successes. And from the planting in hearts, we shall reap a harvest that will be a winnowing of all *wheat* and *few tares*!

FOOD-LAWS AND THE MAKING OF A HOME.

Dr. Lucius P. Brown, State Food and Drug Commissioner, addressed the Association as follows:

I do not know whether it is known to you, and I am sure it is not a matter of such general information as it ought to be, but it is a fact that the passage of the National Food and Drugs Act was largely due to the organized efforts of Home-makers—that is, to the women of the country. And if you will analyze the matter just a little, you will see why this should be so. It is the man's part in the family to be the provider—to go out and wring from an oftentimes unwilling soil or from a still more reluctant society, the food, shelter and clothing which are the primary needs of the family. Woman, on the other hand, is the spender and preparer. She it is who actually buys this food and raiment, and sees that they are in condition for use. Their spheres are co-ordinate and of equal importance—although the man, with that superior power and self-reliance, which is engendered by his battle with nature and with other men, is often prone to deny this co-ordinate quality—this equality of importance. Such being the case, it follows that thought-

ful women should and do concern themselves with the quality of their food-materials, and are insistent that nothing not of approved purity shall be used in their households.

The passage of the National Pure Food Act and of the same Acts by the several States, is a proud record of accomplishment, but it is only the beginning of the work. There is a great outcry now in the press about the non-observance of law, and food laws are not an exception. The officials do all they can, but the inspections, both State and National, are absurdly under-manned and ill-equipped. The satisfactory completion and subsequent carrying on of such work is therefore largely in the hands of the women of the country who are the home-makers and food-purchasers. How, then, can this work be done?

I would suggest first that a food which is, from the standpoint of composition, strictly pure, may be absolutely unwholesome when eaten; and conversely an impure food may be wholesome. This apparent paradox is understood when it is remembered that a pure food may be manufactured or marketed under such unsanitary conditions that it produces disease when eaten, while on the other hand a food containing an impurity may be marketed under absolutely sanitary and germ-proof conditions. This illustration is introduced in order to bring vividly before you the great importance of the so-called "Sanitary Food-Law," which provides for absolute cleanliness in the making and selling of foods, as well as to call your attention to the two branches of the subject.

Now it is literally true that one active and energetic woman in a community can do as much for the enforcement of food-laws in that community, by talking to her neighbors and so arousing a healthy and neighborhood sentiment, and by refusing to patronize unclean or dishonest dealers, as can a food inspector. And such influence is much more effective than that of the official, for it is the duty of the latter to enforce laws, while the action of the consumer is purely voluntary. If the influence of the individual is so great the influence of the organization is much greater. Every woman's club in the country, even though its objects be literary or social, can profitably devote at least a small portion of its time during the year to the discussion of these important questions. I want to go still

further, and urge the Church organizations to follow the same plan. If morality be a part of religion, as it is commonly esteemed to be, then surely any move which promotes morality should be fostered by the churches, and pure food laws and their enforcement not only do this, but they promote health (without which no morality can long endure) as well. And as the Church's societies are mostly composed of women, such matter would be doubly in place.

Now the means by which organized home-makers can work are many. One of the most effective is the so-called "White List." This is a list of dealers of all sorts who keep sanitary places, and do not sell impure goods, made up from the records of the local inspection, such as that of city or State. The members of the organization pledge themselves to trade only with the dealers whose names appear on this list. You will find that this is a most effective weapon. Loss of business is the most potent appeal to the business man, and if a careless or unclean dealer finds that he is losing business he at once ceases to abuse the inspectors, and begins getting himself into shape to deserve a share of good people's trade. Pains should be taken to let dealers know that such a list is being used. In Tennessee we use a grading system with five grades, namely: excellent, good, fair, poor, bad. In the inception of such a system of using a "White List," it might be allowable to patronize dealers who graded only "fair." But there is no real reason why the "good" grade should not be the minimum, as the requirements to attain such a grade are not excessive, and a higher standard is set at first. All the records of our department are public records, and are open to inspection and examination at any time, and so you can get the grades of the various stores all over the State, so far as they have been examined. Where this has not yet been done, application from any club wanting to install such a list will receive attention at once, and the necessary inspections be made.

In addition to these lines of activity, pains should be taken by the individual to inform herself of the various laws on these subjects, to take at least one good, pure food journal, and to make such other study of the subject and of the related matters of hygiene, drainage, etc., as time and opportunity allows.

Don't stop here, but get the children interested. They are the ones that will have to carry the country on when we are gone, and they will have a somewhat harder time in many ways than we have had, for they will not have a more or less virgin continent to their hand, ready to yield its sustenance to applied labor. They must mix more brains with their labor than has been necessary for us to do, and they will live in a more densely populated country, where the human wastes will be harder to get rid of and it will be that much more difficult for them to keep health and strength. They are, therefore, entitled to the very best in the way of knowledge that we can give them, and it is our duty to see that they get it. And no part of knowledge is more important, as I have endeavored to emphasize above, than the mate of pure and sanitary foods. In addition to the home-instruction, something as to pure-foods may, and should be taught at school, and here certain simple tests for impurities may be taught. Such tests, simple as they are, and easily performed, will serve not only the purpose for which they are directly designed, but will help to give the child an appreciation of the bearing of science on every-day life—a bearing which is too often lost sight of.

The publications of your State Inspection are designed to be a report to the people of the State of the work which they are paying their inspectors to do. As such, it is believed that they contain much that will be of value to the home-maker, and the department is always glad to have calls for them, for thus it knows that it is reaching the people to whom it can be of most aid, and who will in turn make the best use of their work. The same thing is true of the publications of the Food and Drugs Bureau of the National Department of Agriculture. I want to urge on all home-makers to get these publications, and to use them not only in the home, but also to insist upon their use in the public schools. There is nothing in them that any child that can read cannot be taught quickly to understand and appreciate, and it is hoped that they are not the dry, technical material that probably most people suppose them to be. And if to this is added a list of the materials that are approved by this department which are found in the nearest store or the family grocery and drug store, the children will themselves

not only derive profit from making such a list, but it is probable that information will be conveyed to the grocer and druggist as well.

In conclusion, let me express to you my great pleasure at having the opportunity to talk to farmers' wives. I have spoken to your husbands on certain matters connected with the marketing of their products, which are of interest likewise to you, since most farmers' wives, at least in this State, handle the butter and eggs of the farm, and I think you will find that some of the suggestions made to those gentlemen will result in your getting better prices for these important products. But, as I have suggested above, the most important matter for consideration just now is the purchase of material, and so it is to this that I have addressed myself.

Following Dr. Brown's address the Association passed by a unanimous vote the following resolution endorsing his work and pledging themselves to co-operate with him:

"We, the members of the Home-making section of the Middle Tennessee Farmers' Association, approve heartily of Dr. Brown's plan to keep a list of grocers, bakers and butchers who observe the laws of sanitation in their establishments, and those merchants who give correct weight goods. When such a list is prepared we, the members of this Association, will co-operate with Dr. Brown by patronizing only such merchants as are on the 'White List.'

"We will further use our influence as individuals in the community in which we live, to get our friends to uphold us in our efforts for an honest deal from the merchants we patronize."

The announcemant was made that Col. Robert Gates, Land and Industrial Agent of the Louisville & Nashville Railroad, has promised Capt. T. F. Peck, Commissioner of Agriculture, to allow a percentage of transportation to the women delegates. This means that a percentage of the women members of the Home-making Section of the Farmers' Association will get free transportation to Nashville next year.

Prof. J. D. Strain, State Secretary of the Anti-Tuberculosis Association, was present and spoke briefly of the campaign in Tennessee against tuberculosis and asked for a co-operation of all those present in waging a war against this dread disease. He said tuberculosis was to a great extent subject to the laws of health and sanitation, as there were not enough safeguards thrown around the home and the schools. He emphasized the necessity for nourishing food so one might be able to resist the infection of the disease and urged the avoidance of all the dangers which spread it.

The afternoon session closed with an informal round table, conducted by Mrs. Robert Nichol, and entered into by many of the members present. Mrs. Robert Nichol paid a tribute to Capt. T. F. Peck, Commissioner of Agriculture, for the splendid work he was doing in arousing enthusiasm among the farmers in better agricultural products.

An announcement was made that the visiting ladies would be entertained with a musical in the loggia of the Hermitage Hotel, beginning at 8:00 o'clock this evening. The entertainment was arranged by the Reception Committee of the Home-maker's Section, and it was announced that a number of prominent local musicians would appear on the program.

THIRD DAY—THURSDAY, DECEMBER 7, 1911.

MORNING SESSION.

The first feature of the regular program was a paper by Mrs. Pearl Williams Kelley, Secretary of the State Free Library Commission, Nashville.

THE TENNESSEE FREE LIBRARY COMMISSION.

Mrs. Kelley addressed the Association as follows:

The Tennessee Free Library Commission is a new and interesting department opened by the State last July, and one which is of special help to the citizens of our rural districts.

One of the chief objects of the Commission is to maintain a library which shall be used by all the people of Tennessee who desire books for study or recreation, and to offer a library service which makes it possible for the most remote and isolated regions and the most scattered mountain inhabitant to have good books to use as freely as they would have them in any city. This it is doing through the free traveling library, an agency which has been properly classed with good roads, trolley lines, telephones and rural free delivery in bringing the outside world to people living in rural communities.

Traveling libraries are a collection of fifty books of general reading which are loaned to any community in the State not accessible to a library center. They consist of books of interest in popular science, history, biography, travel, agriculture, household economics, and a liberal supply of wholesome fiction and books for children.

Any community may secure a traveling library by obtaining the signatures of three responsible citizens to the agreement blanks furnished by the Commission, appointing a librarian, and providing a suitable place of keeping for the library, and paying the transportation charges both from Nashville and return. The books are the property of the State and must be

loaned free of charge to any responsible person wishing to use them.

The library may be kept for the period of three months with the privilege of renewal for another three months, and returned to the office of the Commission at the Capitol at Nashville for exchange.

Many good books on agriculture have been placed in the hands of the farmer, giving a new impetus to life on the farm, throwing a new light on garden and field, and producing an interest from a surplus the farmer had not dreamed of before. Such helps in general education will not only keep the boy on the farm, but will bring him back from the sweat shop even unto his own. Farmers with new barns to be built, with problems of fertilizing to be worked out, are quickly learning that our traveling libraries can furnish them the information wanted which they might have to go without, if it were not for this State plan of meeting their needs.

A splendid collection of books on household economics has been purchased to supply the demand from the women of Tennessee, which has been strongly felt for years for helpful literature on this important subject. While we are supplying the farmer with books on the scientific feeding of farm stock, we are sending to the housewife books on the scientific feeding of the human animal. If it is of value for the farmer to understand a balanced ration for his cow, why is it not of equal importance for his wife to understand a balanced ration for her family? Are not the children of more value than the cows? Does not the future of agriculture in our country depend upon the physical, mental and moral condition of our boys and girls? Does not this condition depend largely upon the wisdom and intelligence of the mother? The farmer wishes to know something about the relative value of a silo and the best way to construct a poultry house, but the farm-wife wants to know how to build a home so that its influence may be helpful and lasting.

In speaking of traveling libraries, a recent editorial in the *Oregonian* said: "But after all, where can the people's money be better spent than in carrying books for young and old to the very doors of the ranchman in the foothills, the tradesman in

the little town, the invalid in the lonely room, the children clustering in the winter night around the open fireplace? Books used to be a luxury too costly for the scantily-filled pocket. Now, without cost, as a right recognized and supplied by the State itself these books go into the highways and byways. No fear that any check will stay the development of books for the people, young and old."

Every sound instinct of national preservation and patriotism demands for the masses of our people a fuller education to train them to meet conditions that are each year becoming more complex. To the man and woman upon the farm even more than to the people in the city, the news of the great movements of the world must come by reading.

Is it possible to devise any addition to our system of popular education which will give so much information, so carefully chosen, at so small a cost as is given through our free traveling libraries? Not one citizen in one thousand could select as good books, could buy as cheaply and make exchanges of reading as wisely and satisfactorily as all, working unitedly, are doing for all.

In no other activity in which the State is engaged are the people reached and helped as through our free traveling libraries, although there are many communities still untouched for lack of means to supply them.

God speed our traveling libraries: the promoters of civilization, the makers of true homes, the moral uplifters of communities, the benefactors of our district schools, true missionaries in the homes of the isolated, destined to one day become one of the most powerful influences in the Volunteer State.

Miss Mary Skeffington, State Librarian, gave an excellent report from the Extension Department of the State Library relating to the libraries for the county schools. Miss Skeffington said the placing of the libraries in the county schools was the first step in the work the State library expects to do. "The hope of the future," said Miss Skeffington, "lies in the boys and girls, and these libraries go far in giving the children of the rural districts an education they could not otherwise get outside the cities or larger towns."

One of the most interesting addresses before the section was that of Mrs. Myra N. Tandy, President of the S. A. I. of Lawrence County; who spoke on "The Rural School, the Social Center of Country Life." Mrs. Tandy told of many cases of deep ignorance found in the rural districts and how, through the school improvement and social work, many had become interested in the libraries with encouraging results. They hoped to increase the benefits of the country schools by the organization of clubs. She said the State had given the country free traveling libraries, but she thought if the federation of clubs would send free traveling phonographs and traveling moving picture shows and experienced persons to teach better cooking, dressmaking, and other trades, it would give the children and women of the rural districts a broader education, and bring into their lives some of the good things enjoyed by those of the city.

Miss Gertrude Hill, Secretary of the Woman's Department of the State Fair, spoke of the work of the county organization for home-making.

IMPROVEMENT IN OUR RURAL HOMES.

Mrs. Rutledge Smith, President of the State Press and Authors' Club, was introduced and addressed the Association as follows:

When asked to talk on the subject, "Improvement in our Rural Homes" or "Betterment of Country Life," I was delighted, for it is a question in which I am much interested. As an ardent lover of nature, I firmly believe that the boys and girls reared near to nature's heart, yet given the advantage of a real home, an ideal home some people might call it, will develop into our highest and best citizens and become the leaders of their age.

In ante-bellum days the country home was the ideal home of the South, and the large colonial house, that stands to-day, is a memorial not only to the delightful hospitality of those days, but is a memorial to the many servants then available.

These magnificent plantations, however, after the war were divided into smaller farms and sold, and thus began a new era in country life. The farms had been devastated by war, the roads neglected, negroes freed, servants scarce and hard to control, and country life had become most unattractive. Many of the best planters or farmers moved to town in order that they might have the protection of near neighbors, a protection very necessary during the reconstruction period.

But those who stayed on the farms learned a lesson from Mother Nature, for where the ashes of war had lain she sent forth new life, bidding man to take hope. The hay fields flourished, the berries ripened and the budded apple trees swelled with pride that their old rough limbs were to be covered and that they could give forth their fruit once more. The harvest time came, the farmer found that the pen of logs was not large enough, so he built him a barn, and his neighbor did likewise, and as the years passed with their increase the barns grew and the fatted kine and sleek horses became the pride of the farm.

The one room left from the fires of war with a "lean-to" added had sufficed for the housing of the family. Each year the farmer promised next to build a house, to make more comfortable the wife and child, but each coming year found the improvement of barn and stock his first ambition, forgetting that the home must be made magnetic with love and comfort if the boys and girls are to be held there. He let them contrast the bright, comfortable homes of their city cousins with the dull, barren walls which enclosed their home life, until there awakened within the breast of the coming youth a dislike of the rural life and a longing for the city's brightness, thus the trend of the country boy and girl was made toward the will-o-wisp light of the towns and cities.

Not long since I had occasion to visit a country home, the location of which was ideal, and the farm was known far and wide for its productiveness. I drove along the main county road for several miles, then turned aside and drove down one of the roughest roads imaginable, for about a half mile, when I came in sight of the orchard, from which for years I knew my neighbors and I had received a goodly share of fruit, an orchard known for its non-failing qualities. Back of the orchard

set the old homestead, and as I drove up I wondered at its "ancient appearance." The good woman of the house, hearing the bark of the watch-dog, came from the cornfield and, despite the fact that she was barefooted, greeted me with cordiality and hospitality, explaining that she was barefooted because she had been thinning corn. Her invitation to dinner was gratefully accepted, as it was near the noon hour, and in apologizing for her kitchen she referred to the fact that when it rained she had to carry an umbrella while she cooked. The dinner was soon served and then I was shown around the farm, which was a good one, with the barn well built and well filled. It was no wonder to me when a few months later I heard that the oldest son of the family had run away from home—the *stock had been more thought of than the child*.

On another occasion I drove into a neighboring county, not so famed for its farm land, but I was a guest in one of the most elegant homes. The handsome structure stood well back from the road, and as I drove up the spacious lawn I felt the attractiveness of the interior of the home, and as I crossed the threshold I knew that the spirit of home-life was there. Modern conveniences were here found, acetylene gas made bright the night, water piped from a near-by spring lightened the labor of the kitchen and laundry and made complete the well-fitted bath room, while on the table the fruits of the season were found served with daintiness and taste. The barnyard proved most alluring, for here the proud turkey gobbler gobbled away as the grey gander hissed at the passerby, the busy hens sang and scratched and scratched and sang, the guinea fowl, with its continuous "patter-rack," lent an accompaniment to the deep bass of the "quack, quack" of the duck, while across the field fat and sleek kine lazily fed on the blue grass bountifully provided for them. A near-by barn was filled with burley tobacco, that hung in great sheaves from above, and another, further away, held a horse for each member of the family, and strong mules that the farm work might move on. A pond, well filled with fish, added to the picturesqueness of the whole, and I thought of what the young lady daughter of the house, a recent graduate of one of the foremost colleges of Nashville, had told me as we drove to this Acadian-like home of hers:

"There has been a time," she said, "when I wished to move to town, but since I am grown I love and appreciate my home. I know there are few who have such a home life as I, and despite the fact that I live in a county where there is no railroad, I realize how blessed I am. I have my city friends who come to me or I go to them. When I am lonely I saddle my horse and ride until I am invigorated and on my return I find comfort in the papers and magazines that come daily to our door, or please father with the music he loves so to hear." That was an ideal home realized.

And how easy would it be for every farmer to plant just such a love of home in their boys and girls. It is well enough to build fine barns and have blooded stock, but why not carry the lesson of Nature further and teach the growing youths that, as in stock, so in man, will blood tell and that the strength of INHERITANCE is as strong in the HUMAN race as in that of any animal. The man of principle and the woman of truth transmit principle and truth in their children. Watch the associates of your boys and girls, and if it is necessary to have help of unsteady habits, keep your children away from them.

It is well to build fine barns and fill them, but consider the home life also; make the home attractive. It does not necessarily have to be large to be appreciated; fill it with the spirit of hospitality, add to it good cheer, made more cheerful by modern comforts. Very few farm houses are there that have not been builded near some everlasting spring or well, then in this day and time of modern machinery how easy is it to have a ready flow of water in every room of the home, and what a blessing to the house wife, while the farmer who has once tried acetylene gas or electricity will never go back to kerosine.

Build a living room for comfort, and let life be found in it. If the daughter has not the musical touch buy a pianola, victrola, or graphophone, for the home without music is like unto a tomb. The rural free delivery will take to you the papers of the day and they, with the magazines, will keep you posted, interested in current events. The telephone is no longer a novelty, for every regulated home has one, and the boys and girls of a neighborhood are brought into closer relationship through it.

Build up a home life for the boys and girls that will hold them

to the home. Let the energetic spirit find a congenial outlet, and as the body grows, encourage the mind and soul to expand so that with the brawn and brain of the future tiller of the soil, may be found a beauty and purity of the soul the combination of which will cause the Maker, God, to look upon as he did the first and say "It is good."

THE RURAL SCHOOL, THE SOCIAL CENTER OF COUNTRY LIFE.

Mrs. Green Williams read the following paper:

Madam Chairman, Ladies and Gentlemen:

Ellen Key, the great Swedish reformer and author, has just built a commodious, comfortable house by the side of a lake in the great forest of her native land. It is filled with the magnificent gifts of titled people, with the books and pictures of a lifetime of selection, with the furniture and hangings that wealth can buy. At her death, all this passes into the hands of a Board of Trustees and her will provides that every year, from April to October, four working women at a time are to be entertained for a month as her guests in this lovely home.

Miss Key got the idea from the remark of a laundress. She had said "rich people think that we poor people envy them their wealth. It is not so. What we do envy is their culture and their opportunities for culture. We, too, would like to have the opportunity and the leisure to see beautiful pictures and statues, to read books, to travel. It is their culture we envy."

As a result of this talk social evenings were started in Stockholm that have been kept up for seventeen years and have resulted in much good to the wealthy women who have talked of their books and travels as well as to the working women who had not these things.

The Rural School, the Social Center of Country Life, is a broad subject, and includes every phase of country activity. The whole scheme of life is centered around the idea that man is a social being, but the social life of the country bears no resemblance to the society life of the city. The country woman, with her round of duties, her multitudinous cares, her few

servants, her scanty store of wealth, has no time for clubs. She is accustomed to do, not talk. In a discussion she cannot hold her own, but no woman is more ready to listen and learn than the country woman. Many a mother longs to find some way to spare her daughter the treadmill existence she has known.

The nation and the State have been good to the farmer, but until very recently his wife and children have shifted for themselves. The schools were of the poorest, due to young, inexperienced teachers and dilapidated houses. The roads made travel impossible, except in the early summer, and the fall almost impossible. When the roads were good mother and the children were too busy to go, or else teams could not be spared. In fact, the average country home might as well be set in the midst of Sahara, so far as social intercourse or knowledge is concerned. It is true that the Rural Delivery and the Telephone are making a few rifts in the black clouds, but the sunshine is still very faint.

Miss Skeffington has said the boys and girls of to-day are the men and women of to-morrow and we must set them to reading now if we would have them thinking then. She has told us of the value of the State Library to the school and I know from experience how much pleasure the pupils of a school in Lawrence County received from a ten-dollar collection of books.

Mrs. Kelly has explained the value of the traveling libraries and we all know what has been said is so, but we must take into consideration that many families have no children in school and a great many of these cannot read or write. These certainly need help as much as anyone.

The State has already given us our Library System, why cannot it give us traveling phonographs, art exhibits, moving pictures, lectures, in fact, organize a lyceum bureau on the same plan and let every school have the opportunity of enjoying a taste of outside life?

The "Back to the Farm" movement is taking hold of the people with a firm grip, but a "Stay on the Farm" movement would be better. Ellen Key's laundress was right. Country people do not envy you your wealth or your fine homes, they envy your schools, your lectures, your concerts, your culture,

that which the broad world gives. It is this that country young people come to the city to find. You can simplify your problems of philanthropy by sending a little of your culture to us and keeping the country youth where he naturally belongs.

The Federation of Clubs has done a great work and Tennessee stands high in the column of successful workers, but in great part your work has been and is now being done for women who do not need it. We long for just a small taste of what you have in such abundance. You know we can live and die without books, but where is the man who can live without cooks? To make the children of to-day the kind of men and women that to-morrow will need we must feed them on something besides cow peas, greasy bacon and sour corn pone. We need the cooking demonstrations not to teach us fancy cooking, but variety of serving and care in choosing. We need instruction in ventilation and sanitation in all branches of our work.

East Tennessee is not the only section where ignorance and poverty abound. Not one hundred miles from Nashville a family of nine people lived in one room about sixteen feet wide and thirty feet long. This is not usual, though there are many instances of two or three rooms sheltering as many as ten or a dozen. And when you think that they live on corn bread, beans and side meat it is no wonder that typhoid, tuberculosis, pellagra and hookworm are on the increase.

The country school is the logical place to begin. Here no difference of creed or politics obtrude. Parents and scholars are used to coming here. Seats are always ready, and light and heat easily provided. If the teacher is working for love of the cause, it will be easy to organize corn and potato clubs for the boys, and tomato and poultry clubs for the girls. Cooking, sewing and house-keeping classes are drawing cards always, and the black-board furnishes ready means for teaching many lessons.

Whatever calls all the people of a community together will show in increased interest in the school house and grounds and the School Improvement Association is the next step. In a like manner, an attractive school house shows its influence in child life in the home. Let me tell you a story. In Lawrence County is a little worn-out room, seventeen by twenty-five, housing from thirty to forty children. The windows are

uncurtained, floor dirty and untidy, seats dusty, old coats and hats stuffed into broken window frames. It is the last day of school and an index to conditions for six months back. The children are noisy, careless, indifferent. At the next time, a new teacher scrubbed floor and walls, repaired windows, put up brown shades, provided a table, chair and waste basket, did away with all the rubbish and weeds inside and out, and filled the front windows with plants. A bust of Shakespeare and a few pictures decorated the walls. The many visitors remarked upon the improved behaviour of the children in school. In some families the difference at home was as marked. Sometimes a black thread held a red patch on a light garment, but a patch of any kind was an improvement.

The Rural School is the social center of country life, and the people of the cities can help make it a magnet to draw the country boys and girls still closer to it. We appreciate this opportunity of mingling with you women of greater experience and feel sure it will be mutually helpful, but we entreat you out of your abundance to remember our great need and beg you to share with us. Will you do it? Thank you.

Talks were made by Mrs. George Nichols, Columbia, County Chairman of the State Fair; Mrs. E. W. Foster, Nashville, representing Davidson County at the State Fair; Mrs. O. B. Baker and C. C. Gilbert, Nashville.

AFTERNOON SESSION.

Mrs. Clara Boone Mason, of Prospect, President of the Giles County Home-Makers' Club, brought a message from her county, pledging the support of her club to the Home-Making Section of the Middle Tennessee Farmers' Association.

Following Mrs. Mason's address, Dr. Olin West spoke on "Health and Sanitation."

Dr. West said in part:

"The State Board of Health is sending five men through-

out Tennessee, primarily for the purpose of investigating the sanitary conditions in the rural homes and schools. They have found that less than three per cent of the rural homes are provided with proper sanitation.

"These men are doing all in their power to instruct the citizens in all communities in regard to preventable diseases. Many appalling conditions have been found in this connection. In one county 73 per cent of the school children were found to be suffering from the hookworm disease, not only curable, but easily prevented.

"I cannot conceive of a greater work than the women of this Association are seeking to do. By teaching hygiene and the proper methods of living to the children in the schools, you will soon see a marked change in the homes as well."

Dr. West closed his address with a plea for medical examination throughout the public school system of the State. He said that so successful had been this method in all cities where examinations had been instituted, that in not one instance had medical inspection been abandoned.

Miss Virginia Moore addressed the Association on the "Girls' Poultry and Canning Club of the State." Miss Moore is in charge of the organization and in her address asked for the co-operation of all present.

CONSTITUTION AND BY-LAWS ADOPTED.

The following Constitution and By-Laws were unanimously adopted:

CONSTITUTION.

ARTICLE I. Name—This organization shall be known as the Middle Tennessee Home-Makers' Association.

ART. II. Object—The object of this Association shall be to unify the housekeepers of Tennessee in an effort to better their own home conditions, to help future homes by encouraging the introduction and development of Home Economics in all the schools of the State, and to co-operate with other organizations working toward the same end.

ART. III. Membership—Any woman in Middle Tennessee interested in the objects of this organization is eligible to membership.

ART. IV. Officers—The general management of the organization shall be in the hands of an Executive Committee, consisting of a President, Vice-President, Secretary and Treasurer, elected annually, and of three other members holding office for three years, one of whom shall be elected each year.

ART. V. Meetings—The meetings shall be held in Nashville annually, during the session of the Middle Tennessee Farmers' Convention.

ART. VI. Amendments—The constitution may be amended at any annual meeting by a two-thirds vote, the proposed amendment having been submitted in writing to the Executive Committee and notices and copies of the same having been appended to the call of the meeting; or, without such notice, by unanimous vote.

BY-LAWS.

Article I.

SECTION 1. Duties of Officers—The duties of the officers shall be the same as in similar organizations.

SEC. 2. The duties of the Executive Committee shall be to appoint such standing committees as in its judgment it deems wise to transact routine business between annual meetings, and make a full report of its work at the annual meeting.

Article II.

SECTION 1. Elections—All nominations and elections shall be by ballot.

SEC. 2. In case of vacancy in any elective office, the President may fill the same by appointment until the next annual meeting.

Article III.

SECTION 1. By-laws may be adopted, amended or suspended at any annual meeting by a two-thirds vote.

On motion of Mrs. Chas. H. Slack, the Nominating Committee, composed of Miss Catharine A. Mulligan, Knoxville; Mrs. Chas. O. Browder, Sweetwater; Mrs. Jas. A. Reagan, Sweetwater; and Miss Gertrude Hill, Nashville, presented the following list of officers, who were unanimously elected for the ensuing year:

Mrs. J. Taylor Stratton, Madison, President; Mrs. Clara Boone Mason, Prospect, Vice-President; Mrs. Myra A. Tandy, Lawrenceburg, Secretary.

The following Executive Board was also elected: Mrs. John Walker, Wartrace; Mrs. John Thompson and Mrs. T. G. Settle, Nashville.

The Association then adjourned to meet in Nashville in December, 1912.

INDEX

	PAGE
Address, Capt. T. F. Peck, Commissioner of Agriculture....	18
Address of Welcome, Gov. Ben W. Hooper.....	5
Annual Address of President Sam N. Warren, Spring Hill, Tenn.....	8
“Back-to-the-Farm” Movement, Chas. C. Gilbert, Assistant Secretary of the Nashville Board of Trade.....	32
Boys’ Corn Club Work in Tennessee, Thos. A. Early, Bureau of Plant Industry, U. S. Department of Agriculture....	22
Constitution and By-laws.....	156
Contagious Diseases of Animals in Tennessee, Dr. Geo. R. White, State Live Stock Inspector.....	36
Dairying, J. H. McLain, United States Department of Agriculture.....	47
Election of Officers.....	109
Farm Demonstration, H. D. Tate, Bureau of Plant In- dustry, United States Department of Agriculture.....	62
Farmers, the Conservative Force in the Body Politic, Col. Robert Gates, Land and Industrial Agent of the L. & N. Railroad	55
Feed and Seed Control Laws in Tennessee, A. L. Garrison, State Chief Feed and Seed Inspector.....	91
Food-Laws and the Making of a Home, Dr. Lucius P. Brown, State Food and Drug Commissioner	138
Foreword, E. O. Luther, Chief Clerk, Department of Agri- culture.....	3
Health and Sanitation on the Farm, Dr. Olin West, State Board of Health.....	70
Hog Industry in Tennessee, J. D. B. DeBow.....	108
Home Conveniences, Mrs. J. Taylor Stratton, Madison, Tenn.....	125
Household Efficiency, Miss Catharine A. Mulligan, Dean of Woman’s Department, University of Tennessee.....	121
How to make the Farmer’s Home More Comfortable, Mrs. Robert W. Nichol, Nashville, Tenn.....	131
Improvement in our Rural Homes, Mrs. Rutledge Smith, President of the State Press and Authors’ Club.....	147
Live Stock Industry in Tennessee, J. A. Jackson.....	60
Loving Cup Awarded, Presentation Speech, Judge Robert Ewing.....	64
Memphis-to-Bristol Highway, James Palmer.....	44
Poultry Industry in Tennessee, J. A. Dinwiddie, New Market, Tenn.....	62
Preparation and Fertilization of Soils for Large Yields, Prof. H. A. Morgan, University of Tennessee.....	26

	PAGE
Prizes Awarded, Presentation Speech, T. Garland Tinsley, Agricultural Committee of the Nashville Board of Trade.....	51
Resolutions Adopted.....	109
Response to Address of Welcome, Hon. John Thompson, Nashville, Tenn.....	7
The Cost of Production of Farm Crops, F. W. Gist, Special Agent, United States Department of Agriculture.....	81
The Farmers' Eggs and Butter, Dr. Lucius P. Brown, State Food and Drug Commissioner.....	105
The Rejuvenation of Worn-out Soils, Dr. George H. Ashley, State Geologist.....	113
The Rural School Situation in Tennessee, J. W. Brister, State Superintendent of Public Instruction.....	10
The Rural School, the Social Center of Country Life, Mrs. Green Williams.....	151
The Tennessee Free Library Commission, Mrs. Pearl Williams Kelley, Secretary of the State Free Library Commission, Nashville, Tenn.....	144
Truck Growing in Middle Tennessee, J. N. Meroney, Maury County.....	102
Winter Corn Show Awards.....	65

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IN THIS ISSUE:

- Announcement.
- Advantages of Tennessee.
- The Prevention of Typhoid Fever.
- To Obtain a Traveling Library.
- Importance of Eradicating the Cattle Tick.
- Live Stock Sanitary Control Work.
- East Tennessee Farmers' Institute.
- Road Building in Tennessee.



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A. L. GARRISON, Chief Feed and Seed Inspector.
T. G. SETTLE, Statistician.
DR. GEORGE R. WHITE, State Live Stock Inspector.
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HOYT N. HARDEMAN, Stenographer.

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STATE CAPITOL, NASHVILLE

ANNOUNCEMENT.

The Department of Agriculture of Tennessee begins with this issue the publication of a monthly bulletin to be known as "Tennessee Agriculture," which will bear date of and appear on the first day of each month.

It will be widely distributed over the State, and is primarily designed to place the Department and its operations in closer touch with the people and more especially with the farmers, who will find in each issue articles well worth reading and filing away for future reference.

On the prosperity of the farmer depends the prosperity of all the people of the State, and to aid the farmer in getting the most out of his labor, thereby prospering himself and the State, is the aim and effort of the Department of Agriculture of Tennessee, and to this end, as one part of the work of the Department, it is hoped to give this bulletin a wide circulation, and to have in each number something that will be of lasting benefit to the agricultural interests of the whole State.

The work of the Bureau of Immigration and of the Live Stock Department, in both of which all the people of the State are interested, will be noted in this and succeeding numbers. The Bureau of Immigration is making an energetic effort to secure desirable immigrants, and the Live Stock Department is waging a successful fight against contagious diseases among animals in the State.

No effort will be spared to make this publication of interest to the people and benefit to the State, and the Department asks the cooperation of all those who have at heart the welfare of the farmer.

ADVANTAGES OF TENNESSEE.**Inducements that Bring Other People Here Seeking Opportunities Should Serve to Keep Tennesseans at Home.**

BY T. F. PECK, COMMISSIONER.

While the Department of Agriculture and the Bureau of Immigration have been conducting an active campaign in the Northern States to acquaint the farmers and investors with the advantages and opportunities offered to the homeseeker and investor in Tennessee, we feel that we can serve our State equally well by emphasizing to our own native Tennesseans the real advantages we have in Tennessee over other sections of the country.

This is a duty that has been neglected by Tennessee, and has been taken advantage of by the wideawake land agents of less favored sections, and has resulted in the emigration from Tennessee of thousands of our citizens, taking with them millions of dollars needed in Tennessee for the State's development.

Of the thousands who have emigrated, many have returned wiser but poorer men. Others had in a measure burned the bridges behind them and had to stay. They were thrown upon their own resources among others from other sections, and in many cases they have made good under conditions far less favorable than those left behind. They have become leaders in those sections, and would have done much for Tennessee if they could have been properly situated and stimulated to put forth the effort and energy circumstances forced from them in their adopted homes.

Other sections have some special advantages, but Tennessee combines them all. No matter what kind of soil, what kind of water, what elevation, what kind of farming, Tennessee offers variety to meet every requirement, and if Tennesseans knew more about the advantages and opportunities in different portions of the State, the dissatisfied of one portion could find in another section of the State conditions meeting his requirements and needs.

The Department of Agriculture proposes to put forth an effort to make Tennesseans better acquainted with Tennessee, so that instead of going out of the State to find certain conditions to meet their requirements, they may know where in Tennessee they can find them.

Before the cheap lands of the Western States were taken up, the prospect of a fertile farm at small cost was alluring to the homeseeker.

But now the productive lands of the Western States are higher-priced than the same quality of land in Tennessee, while the climate, water and rainfall in other sections in no ways compare with Tennessee.

We want to tell Tennesseans what we have told people in other States concerning the advantages and opportunities for the home-seeker and investor in our State. These facts and conditions are well known to many Tennesseans, yet there are too many who are unacquainted with the splendid opportunities for profit that are offered in many branches of agriculture in Tennessee, and it is to these especially that it is desired to emphasize a few points.

In climate, rainfall and soils, no State in the Union offers greater advantages and opportunities for success in agriculture and its allied industries. Owing to its topography and varying altitudes, Tennessee has a great variety of soils and can successfully grow any crop for the market that is grown elsewhere in the United States, except the sub-tropical fruits. This is a distinct advantage Tennessee enjoys over most of the other States of the Union.

In the States of the North and Northwest the farmers depend necessarily on one or two crops. In Iowa and Illinois the dependence is corn. Farther northwest, the dependence is wheat. In the West, the dependence is corn and wheat; in the Southwest it is corn and cotton. In the farther South the principal crop is cotton.

But in Tennessee all these crops can be grown with equal success, and besides these, tobacco, peanuts, all the orchard fruits, many varieties of berries, and the garden vegetables are successfully grown for market, and in many sections of the State market gardening is a very profitable industry.

Tomatoes in the market garden section of West Tennessee have yielded from \$300 to \$500 profit per acre. In the Chattanooga district great profits are made in market gardening. In all sections of the State this industry is increasing, and the indications are that it will soon be one of the chief sources of revenue to the people of the State.

Large yields per acre of strawberries of the finest flavor are annually made in the trucking districts of Tennessee. A Humboldt grower in 1910 took from four acres a crop of strawberries and a crop of tomatoes, the two realizing \$1,300. Profits on ten acres planted by a Rhea County grower realized about \$500 per acre. The Chattanooga district shipped 500 carloads, worth about \$360,000. A large part of this crop was raised in Rhea County, where there is an abundance of the same kind of land to be had at a very low figure.

For the production of all the forage crops there is no better State

in the Union than Tennessee. In some sections the yield of timothy runs from two to three tons per acre. The cowpea crop is always prolific, and this crop can be successfully grown in all sections of the State, and is very beneficial to the soil.

One special advantage Tennessee has over our Northern States is the fact that we can grow a money crop each year and also a feeder crop for the soil. Every one who has given scientific agriculture any thought realizes that it is absolutely necessary to return vegetable matter to the soil. Because of the short season in the States north of us, when a crop of vegetable matter is turned under there is no chance for a money crop the same year, while in Tennessee a crop of wheat and a crop of peas can be grown on the same land the same year. We



GREAT FALLS OF THE CANEY FORK

can turn under our cover crop of rye and crimson clover and grow a crop of corn. This one feature gives Tennessee a decided advantage in maintaining soil fertility and growing profitable crops.

It is not alone in capacity for growing such a wide range of crops, and several crops a year, that Tennessee excels, but also in the fact that she has an inexhaustible store of raw materials for manufacturing. With unlimited stores of coal and water power, developed and undeveloped, together with our equable climate, Tennessee, and especially

the eastern portion of the State, is destined to become the manufacturing center of the South. This will guarantee a home market for the dairyman, fruit and truck grower and general farmer unsurpassed anywhere.

The open climate, the copious and pure water-courses, and convenience to the best markets form a combination of advantages unsurpassed for stock raising, wintering and dairying. Horses, mules, meat and dairy cattle thrive everywhere in the State—in the fertile valleys, on the plateaus, along the slopes and on the more elevated highlands.

All these are advantages that are being seen and appreciated by people from other States, and they are coming in large numbers. The tide of immigration is to the South, and Tennessee will get more of the desirable newcomers than any other Southern State, because it has more to offer to homeseekers.

These same opportunities and advantages should not be overlooked or underestimated by the people of Tennessee. While we want the thousands of good and worthy citizens of other States who are seeking new locations and new opportunities, we want to keep at home, to aid in the growth and development of the resources of the State, the young men who have reached manhood and are thinking of starting out for themselves.

There is no better agricultural country in the world than Tennessee. There is no section capable of better returns for the labor and money expended, and we ask those of our citizens who are contemplating a change of location to investigate their own State, see what it has to offer in its various divisions and counties, and decide to stay with us and to help build up and develop the State, and make it what it has a right to be and should be—the garden spot of the world.

THE PREVENTION OF TYPHOID FEVER.

BY STATE BOARD OF HEALTH.

For centuries past typhoid fever has slain its thousands, all because we did not know its cause and prevention. Today we know the cause and have the easy means of prevention at our hands. So, then we stumbled into the grave in darkness without knowing the danger that lurked about us. Today we step into the grave in daylight all because of negligence or unnecessary ignorance upon our part.

How can one prevent typhoid fever? A reply is rendered much more simple if the question, "How does one get typhoid fever," is

answered first. There are a few prefatory remarks, however, essential to the answering of both, and the writer would ask that you remember these. First: Typhoid fever is caused by a germ called the "Typhoid Bacillus." Second: This germ does not fall from the heavens nor rise from the earth in fog, but travels directly or indirectly from one individual to another. Third: This germ must be swallowed by an individual for it to cause typhoid. Fourth: Individuals with typhoid are throwing off these germs in the excreta all the time during illness, continue to throw them off for months after recovery, and occasionally an individual continues to throw them off for years afterward. These are called "Typhoid Carriers." Fifth: This germ can live in soil, filth and water (even in ice for months) and can grow and multiply in milk at ordinary temperature. The reader will please remember the above statements.

Now, to the question, "How does one get typhoid fever?" This simply means how does this germ travel from one individual to another? I will enumerate the usual ways. First: One can come in direct contact with a typhoid patient, get the germs on the fingers and carry them to his own mouth before washing the hands. Second: One can eat uncooked fruit or vegetables with soiled hands and get the germs into his mouth. Third: The excreta of a typhoid patient can be disposed of without being treated with a disinfectant, and, if this be on the ground, the germs can seep into wells and springs, and with a thirst-quenching draught one gets the germs. Flies may light and feed upon the filth, carry the germs to raw vegetables, milk vessels or even to the *unscreened* dining-room and there deposit them upon the table to be served. Fourth: The individual, well of typhoid but still throwing off the germs, is a very dangerous character if careless, because he may be your dairyman and handle milk vessels with hands soiled by typhoid germs. He may handle raw vegetables or may use an insanitary closet and throw off billions of germs to which flies have access for spreading in ways already mentioned. This insanitary closet may be situated close by a well or spring and the germs travel the natural course in getting into them, so, the danger of this individual and the importance of care upon his part becomes very apparent.

The answering of the question, "How can I prevent typhoid fever," now becomes a simple matter. The prevention simply means to prevent the germs from traveling any of the above-mentioned avenues from the sick to the well by—First: Killing the germs as soon as they leave the body of the sick or of the recovered, who are still throw-

ing off the germs. Disinfect everything coming in contact with a typhoid patient (preferably by boiling). Disinfect the excreta by chloride of lime or carbolic acid or heat. Allow but few visitors in the sick room and don't allow the nurse to handle the food or drink of others. Screen the sick room (if the entire house is not screened) to prevent flies from going from the sick room to the kitchen. Second: After the patient is well, insist upon the use of a sanitary closet, which is screened and provided with metallic or wooden receptacles, which will prevent both the spread by flies and the contamination of wells and springs. If these are not provided continue to disinfect the excreta. Third: Kill your flies and screen your house to prevent the entrance of your neighbors' flies, which may bring the germs from his insanitary closet to you. Fourth: If you fear the previous contamination of a well or spring boil the water before using. Fifth: Screen or sprinkle with chloride of lime your manure pits, which will serve to keep flies away from their breeding places.

You, my reader, will have observed that the prevention of this disease involves a little care in carrying out a few simple rules of sanitation and a little expense in constructing a sanitary closet. Can you sit idly by and see your neighbor go down to an untimely grave through ignorance of these simple rules? We might add, will you allow this deadly malady to enter the sacred circles of your home through negligence or indifference upon your part? Ponder the question well.

Respectfully,

STATE BOARD OF HEALTH.

TENNESSEE STATE FAIR.

The Tennessee State Fair, which will be held this year September 16-21, will be larger and better than ever before. The Fair is now a State institution, and it is the hope of the Board of Trustees to create a wider interest among the people of the State.

Every county fair in the State should serve as a feeder for the State Fair. The best that is shown at the county fairs should be shown at the State Fair. Each county in the State should have a county exhibit. The premiums offered in this class are well worth striving for.

More premium money is offered this year than ever before, and the proportion that will go to Tennessee exhibitors is larger than it was last year. The Tennessee classifications have been increased in number, and there are prospects of a larger number of exhibitors from among the farmers of the State, and especially from those engaged in the live stock industry.

It is the desire of the Board of Trustees to make every farmer in the State realize that he has a personal interest in the success of the fair. It has done and is doing much to stimulate interest in scientific agriculture and live stock breeding, and the efforts of the Fair management will be to increase this interest. No class in the State has as much to gain from the success of the State Fair as the farmers.

The premiums offered by the State Fair management this year will amount to \$30,000. Of this amount, the larger part will go to Tennessee exhibitors.

For sheep there will be \$1,908 offered, to be divided among the Southdowns, Cheviots, Shropshires, Oxforddowns, Hampshires, Merinos, Dorsets and Cotswolds.

For Poland Chinas, Berkshires, and Duroc-Jerseys, in the swine department, the Fair management offers \$1,590.

In beef cattle the magnificent sum of \$4,045 is offered, divided among the Shorthorns, Herefords, Aberdeen-Angus and Polled Durhams.

In dairy cattle, \$1,719 is offered, divided between Holsteins and Jerseys.

For mules and jacks, \$1,900 is offered, and of this amount \$1,000 will be offered in the Tennessee mule futurity, divided in several classes.

About \$3,000 will be hung up for horses and ponies in the day horse show, and about \$1,500 for the night show classes.

The agricultural premiums will be larger than ever. Every product of the Tennessee farm will be cared for liberally. There will be awards for Boys' Corn Clubs and Girls' Tomato and Chicken Clubs.

The poultry exhibit will be the best in this country outside the Madison Square Garden show in New York City.

The Fair will be an institution of learning in every department. For the entertainment of visitors there will be high class amusements on the grounds.

The work in the Woman's Department has been planned upon a broad basis as a State enterprise, and the directors in the various divisions and counties of the State are working up a larger interest than ever before displayed. The home-makers section of the Tennes-

see Farmers' Institutes will also take an active part in the State Fair. The work in the Children's Department will be given especial attention. Saturday, September 21, will be known as Children's Day.

TO OBTAIN A TRAVELING LIBRARY.

The Tennessee Free Library Commission, the newest department of the State and the one receiving the smallest appropriation, has during the few months of its existence demonstrated its use and helpfulness to the people living in rural communities.

One of the most important features of the Commission is its system of free traveling libraries. Traveling libraries are collections of fifty books of general reading loaned to any community in the State not accessible to a library center. They consist of books of interest in biography, history, travel and a liberal supply of fiction and books for children.

In addition there is a special collection of the latest and best books on Agriculture, covering broadly the most important features of modern agricultural practice in the South, and a choice collection of books on Home Economics to supply the women of rural Tennessee with helpful literature on this important subject.

Any community or club may obtain one of these interesting traveling libraries by securing the names of three responsible citizens to the agreement card of application furnished by the Commission.

It is required that a suitable place of keeping for the library be provided, one that is easily accessible to the entire neighborhood and a place that is open the entire year. The local librarian is responsible for the care and return of the books.

The library may be kept for three or six months, and when the books are returned another library is sent in exchange.

The only cost is the payment of freight or express charges from and to Nashville. Here is an opportunity for the citizens of our rural districts to take advantage of the State's liberality and form a club and write to the Commission for an application card before other communities exhaust the supply of libraries.

FORMULA FOR WHITEWASH.

As this is the clean-up season, the following formula for mixing whitewash is given for the benefit of readers of this bulletin. For sanitary reasons, as well as for preservation, outhouses should be whitewashed. This is a formula used by the United States Government when mixing whitewash for application to public buildings in Washington and elsewhere:

Take one-half bushel unslaked lime, slake it with boiling water, cover during the process to keep in steam; strain the liquid through a fine sieve or strainer and add to it a peck of salt previously dissolved in warm water, three pounds of rice boiled to a thin paste and stirred in while hot, half a pound of Spanish whiting and one pound of glue previously dissolved by soaking in cold water and then hanging over the fire in a small pot hung in a larger one filled with water. Add five gallons of hot water to the mixture, stir well and let it stand a few days covered from dirt. It should be applied hot, for which purpose it can be kept in a portable furnace. A pint of the mixture, if properly applied, will cover a square yard and will be almost as serviceable for wood, brick or stone, and is much cheaper than the cheapest paint.

ECONOMIC IMPORTANCE OF ERADICATING THE CATTLE TICK.

BY G. R. WHITE, M.D., D.V.S., STATE LIVE STOCK INSPECTOR.

Tick eradication means enrichment of Tennessee. It means a New South, more cattle, better cattle and a higher price, without the handicap of quarantine restrictions.

1. The tick should be considered a disgrace—not a misfortune.
2. Every year, in every tick-infested county, the loss on sales of cattle and from the disease would more than pay for eradicating the tick.
3. You cannot fatten cattle while the ticks are sucking their blood.
4. The tick pest is costing the people of Tennessee at least \$500,000 every year.
5. Less than \$50,000 will place the entire State of Tennessee above the National quarantine line.
6. It is cheaper to feed cattle than to feed ticks.
7. After eradicating ticks, the Southern States farmer can raise pure-bred and high-grade beef cattle, thereby enabling him to compete with the Northern farmer at the market centers.
8. Ticks quarantine Southern cattle from the best markets.
9. Ticks keep the Southern cattle raiser's "nose to the grindstone."
10. Ticks cut five to ten dollars per head off the price of Southern cattle and reduce the milk and butter at least 25 per cent.
11. Ticks inoculate cattle with Texas fever, which is a typical "blood poison."
12. Ticks keep many good farmers out of the South, and their prevalence discourages and disgusts many farmers who are already here.
13. The State and Federal Government authorities are ready and anxious to cooperate with the County Courts in the work of tick eradication.
14. Cattle from tick-free sections, when brought into the tick-infested counties of Tennessee, die of tick fever.
15. The following counties are yet in the quarantined area: Hardin, Mc-

Nairy and Chester. Parts of the following counties are yet in quarantine: Polk, Hamilton, Marion, Wayne, Hardeman, Henderson and Decatur.

The speedy destruction of the cattle tick is much to be desired. To do this we have at hand the Twentieth Century method—the ideal way of killing ticks—viz.: The concrete dipping vat and arsenical solution. This method is inexpensive, efficient and practical.

The formula for the dipping solution is as follows:

Sodium Carbonate (sal soda)	24 lbs.
White Arsenic	8 lbs.
Pine Tar	1 gal.
Water	500 gals.

Mix the soda and arsenic within a kettle containing 30 gallons of water; boil it 30 minutes; let this solution cool to 140 degrees, then slowly add the pine tar. Pour the solution into the dipping vat and add enough additional water to make 500 gallons of dipping solution. Enough of the dip should be made to fill the vat to the desired level. If the capacity of the vat is 2,000 gallons, four times the amount of the stock solution necessary to make 500 gallons should be prepared.

This solution is poisonous and should be handled with care.

The Department cautions users of the dipping vat that the cattle should be watered before dipping so that they shall not be thirsty and drink any of the solution, and that they should be handled carefully and not driven hard or excited, immediately before or after dipping.

If "ticky cattle" are regularly dipped every fourteen days in the above-mentioned solution, a farm can be freed of ticks in a few months.

The labor, expense and trouble of dipping is nothing compared to the valuable results obtained.

The great work already done in eradicating ticks from counties badly infested leaves no argument as to the possibility of getting rid of the fever tick. What has been done in other counties can be done in the remaining tick-infested counties if we can secure the necessary cooperation.

The Slogan Should Be
"Get Rid of the Ticks Now."

RULES AND REGULATIONS GOVERNING LIVE STOCK SANITARY CONTROL WORK IN TENNESSEE

Promulgated by the Commissioner of Agriculture and the State Live Stock Inspector Under Authority Conferred by the Acts of Tennessee, 1901, 1907 and 1909.

Effective on and After April 5, 1912.

The fact has been determined and notice is hereby given that the following dangerous and deadly diseases exist in Tennessee: Sheep Scabies, Bovine Tuberculosis, Glanders, Black Leg, Hog Cholera, Cowpox, Johne's Disease, Lung Worm, Nodular Disease, Stomach Worm and Rabies (hydrophobia).

Now, therefore, we, T. F. Peck, Commissioner of Agriculture, and G. R. White, State Live Stock Inspector, do pronounce and declare each and all of said diseases contagious, infectious and communicable, and we further declare

them dangerous to the live stock industry of Tennessee. Acting under authority conferred upon us by law, we hereby promulgate the following Rules and Regulations for their prevention, control, suppression and eradication. All Rules and Regulations heretofore promulgated which are in conflict with these are hereby revoked:

OFFERING OR RECEIVING DISEASED ANIMALS FOR TRANSPORTATION OR TRANSPORTING SAME.

SEC. 18. No person, firm or corporation shall deliver for transportation, receive for transportation, transport, drive on foot, or otherwise remove from the premises where they are located, to any other place within the State, any cattle, swine, sheep, goats, horses or mules which are affected with black leg, anthrax, hog cholera, equine scabies, sheep scabies, lung worm, tuberculosis, cow pox, stomach worm, John's disease or any other infectious, contagious or communicable disease.

SALE AND DISTRIBUTION OF VETERINARY BIOLOGICAL PRODUCTS IN TENNESSEE.

SEC. 19. Before veterinary biological products of any character shall be sold, offered for sale or distributed in any manner in this State, the manufacturer or person, firm or corporation selling or distributing the same shall make application in writing to the State Live Stock Inspector for a permit to sell or distribute said veterinary biological products. Provided, however, that nothing in this section or the sections following shall prohibit or interfere with the United States Department of Agriculture, through its Bureau of Animal Industry, in distributing the veterinary biological products of its laboratories.

SEC. 20. The term Veterinary Biological Products as used in Section 19 shall be construed to mean Tuberculin, Mallein, Anthrax Vaccine, Black Leg Vaccine, Hog Cholera Serum; Tetanus Antitoxin, Influenza Antitoxin, Anti-Streptococcic Serum, Rabies Vaccine Virus, and Bacterins.

BOVINE TUBERCULOSIS.

SEC. 21. That the following shall constitute the minimum requirements for a tuberculin test which will be recognized by this department in the control and eradication of tuberculosis in Tennessee:

(a) At least two (2) temperature readings, three (3) hours apart, shall be made before injection of tuberculin.

(b) The subcutaneous injection of the required amount of any fresh tuberculin made by either the Federal Government or any reliable manufacturer of biological products.

(c) At least three (3) temperature readings on the 12th, 15th and 18th hour after the injection of the tuberculin must be made.

SEC. 22. Veterinarians making the tuberculin test in Tennessee shall fill out in triplicate a temperature chart on official blanks which will be furnished upon application to this department, one copy to be sent to the City Health Officer, one copy to the County Health Officer, and one copy to the State Live Stock Inspector. Said veterinarian shall in all instances mail or deliver said reports within three days after the test is completed.

SEC. 23. No Ophthalmic, Cutaneous nor any other "freak test" will be recognized by this department.

SEC. 24. Veterinarians making the tuberculin test in Tennessee shall brand all reacting animals with the letter "T" on right jaw. The brand letter shall be at least three and one-half ($3\frac{1}{2}$) inches high, and the impression (with branding iron red hot) shall be made clear and distinct. Said veterinarian shall within twenty-four hours report all branded reacting animals to the County Health Officer of the county in which said animals are found. The County Health Officer shall notify the County Live Stock Inspector, who shall immediately visit the farm or premises and isolate and place in temporary quarantine all branded, reacting animals, and said animals shall be kept under official supervision until they are disposed of according to law, by appraisalment and slaughter.

SEC. 25. No person, firm or corporation shall deliver for transportation, receive for transportation, transport, drive on foot or otherwise remove from the premises where they are located, to any other place within this State, any cattle or swine which are affected with tuberculosis as disclosed by physical examination, or by the tuberculin test, or by any other means.

JOHNE'S DISEASE.

SEC. 26. All cattle affected with and premises upon which Johne's Disease is known to exist, or upon which it may hereafter develop, are hereby placed in quarantine for a period of twelve months from date of disposal of the last case. No cattle shall be removed therefrom without first obtaining permission in writing from the State Live Stock Inspector.

SEC. 27. The infested premises shall be cleansed and disinfected in such manner as the State Live Stock Inspector, Assistant State Live Stock Inspector or County Live Stock Inspector may direct, and all carcasses shall likewise be disposed of under their direction.

BLACK LEG.

SEC. 28. Black leg infested farms shall be considered in quarantine until such time as the owner shall cause all cattle less than $2\frac{1}{2}$ years old to be vaccinated with Black Leg Vaccine made by either the Federal Government or any reliable manufacturer of biological products. All cattle less than $2\frac{1}{2}$ years old on a Black Leg infested farm must be vaccinated at least once every twelve months for three consecutive years before the farm will be considered free from Black Leg infection.

SEC. 29. Carcasses of animals which have died from Black Leg must in all instances be disposed of by burning to ashes.

HOG CHOLERA.

SEC. 30. That all public stock yards in the State are hereby placed in quarantine—as regards the handling of swine—and all persons, firms and corporations are prohibited from removing swine therefrom for any purpose other than immediate slaughter.

SEC. 31. Hogs infected with or exposed to Hog Cholera shall not run at large or be driven on ranges, commons or public roads; such hogs must be confined in strict quarantine. Carcasses of hogs that have died of cholera must be sent to a rendering tank, or must be deeply buried or completely burned.

COW POX.

SEC. 32. In dairy herds where Cow Pox develops the well animals must be isolated from the diseased ones, and special milkers must be provided for the affected cows.

SEC. 33. The farm or premises upon which Cow Pox develops is hereby quarantined for thirty days after the recovery of the last case, and no cattle shall be moved therefrom for any purpose until written permission is obtained for said removal from the State Live Stock Inspector.

LUNG WORM AND STOMACH WORM OF SHEEP.

SEC. 34. All sheep affected with either Lung Worm or Stomach Worm, or both, and all Lung Worm or Stomach Worm infested farms or premises, or farms or premises upon which either of these diseases may hereafter develop, are hereby quarantined until the disease or diseases are eradicated. No sheep shall be removed therefrom without first obtaining permission in writing from the State Live Stock Inspector, and then can be removed for no purpose other than immediate slaughter.

SEC. 35. All carcasses of sheep which die from Lung Worm and Stomach Worm disease shall be burned to ashes and the premises cleansed and disinfected in such manner as the State Live Stock Inspector or his assistants or County Live Stock Inspectors may direct.

GLANDERS.

SEC. 36. No person, firm or corporation shall allow any animal affected with Glanders or suspected of being affected with Glanders, or which has been recently exposed to Glanders, to run at large or stray upon or be moved over any public road, common or range, or be given water at any public fountain or trough in Tennessee.

SEC. 37. Animals affected with Glanders or exposed to Glanders shall be placed in temporary quarantine and the fact reported to the State Live Stock Inspector. The temporary quarantine shall remain in force and effect until a diagnosis is made and affirmed and the animal, if affected, disposed of by appraisement and slaughter.

SEC. 38. Before animals presenting clinical symptoms and lesions of glanders are appraised and killed at county expense, the animal must first be examined and the case pronounced glanders by a graduated and licensed veterinary surgeon. When practicable it is desired that the veterinary surgeon's diagnosis be confirmed by either the complement-fixation or the agglutination blood test as made by the United States Bureau of Animal Industry. No animal not presenting clinical symptoms or lesions of glanders and no "suspected case of glanders" shall be appraised and killed at county expense unless and until the blood shows positive to either the complement-fixation or the agglutination test as made by the United States Bureau of Animal Industry. When an animal reacts to the Mallein test, and a diagnosis of Glanders is made based thereon, the animal must be handled as a suspect until the blood shows positive to either the complement-fixation test or the agglutination test as made by the United States Bureau of Animal Industry. Animals which are known to have been exposed to Glanders may be isolated and placed in quarantine for a sufficient time to permit the infection to develop.

SEC. 39. No person, firm or corporation shall deliver for transportation, receive for transportation or transport any animal or animals affected with Glanders to any other portion of Tennessee.

SEC. 40. All cars, stock yards, chutes, pens, alleys, barns, cellars and sheds

having contained glandered animals shall be cleansed and disinfected as soon thereafter as possible by removing all litter and manure and then saturating the surface with a solution containing 5 per cent of 100 per cent carbolic acid. All curry combs, brushes, saddles, blankets, bridles, halters, harness and other articles which have come into direct contact with any part of the animal's body shall be destroyed by burning, or be soaked for a period of not less than twelve hours in a 5 per cent of 100 per cent carbolic acid solution, after which they must be exposed to the direct rays of the sun for a period of not less than three days.

NODULAR DISEASE OF SHEEP.

SEC. 41. All sheep affected with Nodular Disease, and all Nodular Disease infested farms or premises, or farms or premises upon which this disease may hereafter develop, are hereby quarantined until the disease is eradicated. No sheep shall be removed therefrom without first obtaining permission in writing from the State Live Stock Inspector, and then can be removed for no purpose other than for immediate slaughter.

SEC. 42. All carcasses of sheep which die from Nodular Disease shall be burned to ashes and the premises cleansed and disinfected in such manner as the State Live Stock Inspector or his assistants or County Live Stock Inspectors may direct.

SHEEP SCABIES (SCAB).

SEC. 43. That no sheep intended for purposes other than immediate slaughter shall be shipped, traileed or otherwise removed or allowed to drift into the State of Tennessee, except as hereinafter provided, unless accompanied by a certificate of inspection issued by an inspector of the United States Bureau of Animal Industry certifying that the sheep have been dipped once within ten days of time of entry into the State in either a nicotine or lime and sulphur dip which has been approved by the United States Bureau of Animal Industry. Provided, however, that sheep not accompanied by certificate as above indicated may be shipped by rail or boat to points within Tennessee if billed to or through public stock yards where Federal Government inspection is maintained and there unloaded and dipped under the supervision of an inspector of the United States Bureau of Animal Industry.

SEC. 44. When sheep intended for purposes other than immediate slaughter are brought into the State under a dipping certificate, or sheep not accompanied by certificate which are intended to be dipped at public stock yards after arrival within the State, as hereinbefore provided, the owner or shipper shall, before the sheep enter the State, notify the State Live Stock Inspector of Tennessee at Nashville, Tenn., in writing or by telegraph, indicating the number of sheep in the shipment, point of origin and destination, railroad or boat over which shipped, and whether the sheep are accompanied by such certificate.

SEC. 45. All sheep shipped into the State under a dipping certificate, and all sheep transported within the State by railroad or boat, when not destined to market points where Federal inspection is maintained, shall be loaded in cleaned and disinfected cars or boats.

SEC. 46. All official dippings within the State of Tennessee and all sheep dipped in other States which are intended to be moved into Tennessee for pur-

poses other than immediate slaughter shall be made in either "*tobacco*" or *nicotine dip*, or the *lime and sulphur dip*, as prescribed and permitted by the United States Bureau of Animal Industry. No recognition whatever will be given to dipping in dips other than those mentioned above, and no "home-made" dips will be recognized by this department.

SEC. 47. Whenever a shipment of sheep originating in or in transit through the State shall be found diseased with Scabies or other communicable disease, the cars, boats or other vehicles, yards, sheds, pens, chutes, etc., that have contained such diseased sheep shall not be used to transport or yard other sheep until they have been cleaned and disinfected in the manner prescribed in the regulations of the United States Department of Agriculture pertaining to Scabies in sheep.

SEC. 48. Sheep that are diseased with Scabies or have been exposed to the disease may be quarantined by either the Commissioner of Agriculture, the State Live Stock Inspector or any Assistant State or County Live Stock Inspector on any farm, within any shed, yard, stall, crate, box or other permanent or temporary receptacle, and shall not move or be allowed to move except as hereinafter provided.

SEC. 49. No sheep affected with Scabies within the State of Tennessee shall be offered for transportation to any railroad company, steamboat, ferry or other common carrier for transportation to points within or outside the State of Tennessee until they have been cured of said disease. All sheep are subject to inspection by a County or State Live Stock Inspector before being offered for shipment, and must be found free from infection or exposure thereto. Upon inspection, if they are found free from infection or exposure thereto a regular certificate of inspection will be issued. One copy of the certificate shall accompany shipments to their destination and be attached to waybills, and another copy shall be mailed promptly to the State Live Stock Inspector. •

SEC. 50. Sheep affected with Scabies that have been dipped twice, ten days apart, in one of the dips permitted in Section 46 of these Regulations, and under the supervision of a Federal, State or County Live Stock Inspector, may be shipped or driven to any point within Tennessee for any purpose within ten days on permit issued by an inspector of the State or county.

SEC. 51. All sheep in a certain flock or shipment in which the disease is present shall be classed as diseased sheep, and none of them shall be moved or allowed to move except as provided in the foregoing Regulations.

SEC. 52. All cars, stock yards, chutes, pens, alleys, barns, cellars, sheds, racks, crates, boxes or other receptacles having contained sheep affected with Scabies shall be cleaned and disinfected as soon thereafter as possible in the following manner:

Remove all litter and manure and then saturate the interior surfaces with a solution containing 5 per cent of pure carbolic acid.

SEC. 53. The sheep must be kept in the dip between two and three minutes, and their heads submerged at least once, though but for an instant at a time, and assistance must be rendered immediately they appear to be strangling. The dip must be maintained at a temperature between 100 F. and 110 F. while the sheep are in it. It must be changed as soon as it becomes filthy, regardless of number of sheep dipped in it, and in no case shall it be used more than

one week old. In emptying the dipping vat the entire contents must be removed, including all sediment and droppings and other foreign matter.

SEC. 54. Sheep moving under health certificates for breeding or feeding purposes shall be handled in free or uninfected pens in stock yards, and infected sheep, or those moving unaccompanied by health certificate, shall be handled in quarantined or infected pens. All public stock yards which do not maintain quarantine pens separate and distinct from the free or uninfected pens are hereby declared and placed in permanent quarantine, in so far as handling sheep for breeding or feeding purposes is concerned.

QUARANTINE AGAINST THE STATE OF ILLINOIS.

SEC. 55. All live stock of any class originating in the State of Illinois, destined to any point in the State of Tennessee, must be accompanied by a health certificate issued by a veterinary inspector of the United States Bureau of Animal Industry, or the State Veterinarian or his assistants or deputies. The health certificate shall certify that the animals are free from the following diseases or exposure thereto: Glanders, Tuberculosis, Sheep Scabies, Cattle Scabies, Haemorrhagic Septicaemia, Cowpox, Lung Worm, Stomach Worm, John's Disease, Black Leg and Nodular Disease.

INSTRUCTIONS FOR APPRAISING AND SLAUGHTERING ANIMALS IN TENNESSEE.

SEC. 56. Whenever an animal or animals suffering from a contagious or communicable disease are reported by the proper county authorities to the State Live Stock Inspector, an investigation will be made. If, in the opinion of the State Live Stock Inspector, the public safety demands the destruction of said animal or animals, three disinterested and competent freeholders and residents of the county will be appointed in writing by the State Live Stock Inspector to act as a Board of Appraisers to value said animal or animals before they are slaughtered.

SEC. 57. The Board of Appraisers must be sworn by a Justice of the Peace or Notary Public before proceeding.

SEC. 58. The State Live Stock Inspector, Assistant State Live Stock Inspector, County Live Stock Inspector or County Health Officer shall read aloud to the Board of Appraisers Section 10, Chapter 156, Acts of 1901, which is as follows:

"Be it further enacted, That whenever, in the opinion of the State Live Stock Inspector, the public safety demands the destruction of any animal or animals under the provisions of this Act, he shall, before ordering the killing or slaughtering of the same, appoint three competent and disinterested freeholders, who shall be affirmed or sworn before proceeding to act, and they shall make a just and true valuation of said animal or animals to be so killed or slaughtered, and in valuing shall consider the health and condition of the animals when killed, and they shall make and deliver a written certificate setting forth all the essential facts in the case to the lawful owner, who shall present the same for payment to the Chairman of the County Court of the county in which such animal or animals are so killed or slaughtered, and the same shall constitute a county charge, to be paid as other claims against the country are."

SEC. 59. In making their report the Board of Appraisers shall use the

official blank of this department; the same shall be filled out in duplicate, the original to be delivered to the owner for presentation to the Chairman of the County Court, and the duplicate to be mailed promptly to the State Live Stock Inspector.

SEC. 60. The owner or person in charge of any animal killed or slaughtered in accordance with Section 10, Chapter 156, Acts of 1901, shall dispose of the carcass by burning or burying, or make such other disposition as, in the opinion of the State Live Stock Inspector, or his assistants or deputies, or the County Live Stock Inspector, or County Health Officer, the public welfare requires.

Given under our hands and seal, at State Capitol, Nashville, Tenn., this April 3, 1912.

T. F. PECK, *Commissioner of Agriculture.*
G. R. WHITE, *State Live Stock Inspector.*

EAST TENNESSEE FARMERS' INSTITUTE KNOXVILLE, MAY 21-23, 1912.

GENERAL PROGRAM.

Temple Hall.

FIRST DAY—TUESDAY, MAY 21.

MORNING SESSION.

- 10:00—Call to order by the President, John W. Cate, Cleveland.
- Devotional Exercises. Federation of Churches of Knoxville.
- 10:15—Address, Hon. T. F. Peck, Commissioner of Agriculture, Nashville.
- 11:00—The State Fair, W. T. Roberts, Athens; W. R. Reeves, Jonesboro.
- 11:30—The National Conservation Exposition, E. H. Scharringhaus, Knoxville.
- 12:00—Appointment of Committees.

AFTERNOON SESSION.

- 1:00—How to Get and Maintain Stands of Alfalfa in East Tennessee, J. W. Fisher, Newport.
- 1:45—The Rural Community:
 - The School Superintendent, Prof. J. W. Brister, State Superintendent of Public Instruction, Nashville.
 - The Farm Home, President Geo. A. Hubbell, Lincoln Memorial University, Cumberland Gap.
 - The Woman of the Farm Home, Mrs. Charles O. Browder, Sweetwater.
 - The Boy and the Girl of the Country Home, Prof. O. B. Martin, Assistant in charge of Boys' Corn Club Work, U. S. Department of Agriculture, Washington, D. C.

EVENING SESSION.

- 7:00—Home Economics (Illustrated), Miss Catherine A. Mulligan, University of Tennessee, Knoxville.
- 7:45—Open Discussion: How Can Farmers with No Income Except from the Farm Build Up Impoverished Soils?

SECOND DAY—WEDNESDAY, MAY 22.

AFTERNOON SESSION.

- 1:00—Dedication of Temple Hall:
 - Invocation, Rev. Josiah Sibley, Knoxville.

Address, Dr. Andrew M. Soule, President Georgia State College of Agriculture, Athens, Ga.

Reception to Miss Mary Boyce Temple and guests.

4:00—Feed and Seed Control Laws of Tennessee, A. L. Garrison, Chief Seed and Feed Inspector, Nashville.

4:45—Demonstration of Live Stock Judging.

EVENING SESSION.

7:00—Prevention and Control of Human Diseases (Illustrated), Dr. Olin West, State Board of Health, Nashville.

8:00—The Silo: (1) Indispensable on Modern Farm; (2) Types of Silo; (3) Crops for Silo; (4) Feeding of Silage.

Discussion, led by J. N. Meroney, Dark's Mill; and J. W. Hart, Athens, Ga.

THIRD DAY—THURSDAY, MAY 23.

AFTERNOON SESSION.

1:00—Reports of Committees and Election of Officers.

1:15—Cooperation Among Farmers, L. M. Rhodes, President Farmers' Union, Huntingdon; Hon. Oliver Wilson, Master National Grange, Peoria, Ill.

2:45—Adjournment.

GENERAL FARM AND LIVE STOCK SECTION.

Temple Hall.

SECOND DAY—WEDNESDAY, MAY 22.

MORNING SESSION.

9:00—How the Farmers May Aid the State Live Stock Commissioner in the Prevention and Control of Disease, Dr. Geo. R. White, State Live Stock Commissioner, Nashville.

9:45—Beef Judging Demonstration, Prof. C. A. Willson, University of Tennessee, Knoxville.

10:30—The Farm Silo, J. N. Meroney, Dark's Mill.

11:15—Experiences of Farmers of East Tennessee with Crops for the Silo and the Value of Silage. (Five-minute talks.)

THIRD DAY—THURSDAY, MAY 23.

MORNING SESSION.

9:00—The Equipment and Management of a 200-Acre Stock Farm, Prof. Milton P. Jarnagin, State College of Agriculture, Athens, Ga.

Discussion.

10:00—Draft Horses for Tennessee, D. S. Combs, Hickory Valley.

10:30—Demonstration of the Points of Merit in Draft Horses, Dr. M. Jacob, Knoxville.

11:00—Winter and Spring Pastures for Sheep, J. E. Hite, Gallatin.

11:30—Pastures and Crops That Assist in Marketing Hogs from the Field, Dr. J. F. Stanberry, Newport.

DAIRY SECTION.

Implement Building. Experiment Station Farm.

SECOND DAY—WEDNESDAY, MAY 22.

MORNING SESSION.

- 9:00—Some Reasons Why Dairying Is Not More Nearly Universal in East Tennessee, R. M. Murphy, Fountain City.
- 9:45—The Equipment and Management of a Dairy Farm of 200 Acres or Less, J. H. Bradshaw, Knoxville.
- 10:30—Experience in Breeding Dairy Cattle. Discussion led by J. H. McClain, Dairy Division, U. S. Bureau of Animal Industry, Washington, D. C.

THIRD DAY—THURSDAY, MAY 23.

MORNING SESSION.

- 9:00—The Crops to Plant to Insure Green Feed the Year Round, Prof. H. A. Morgan, Director Experiment Station, Knoxville.
- 9:45—The Selection of a Dairy Cow (Demonstrated), Prof. C. A. Willson, University of Tennessee, Knoxville.
- 10:30—Experiences in Other States Helpful to Dairymen in Tennessee, J. H. McClain.
- 11:30—Selection of Next Year's Presiding Officers.

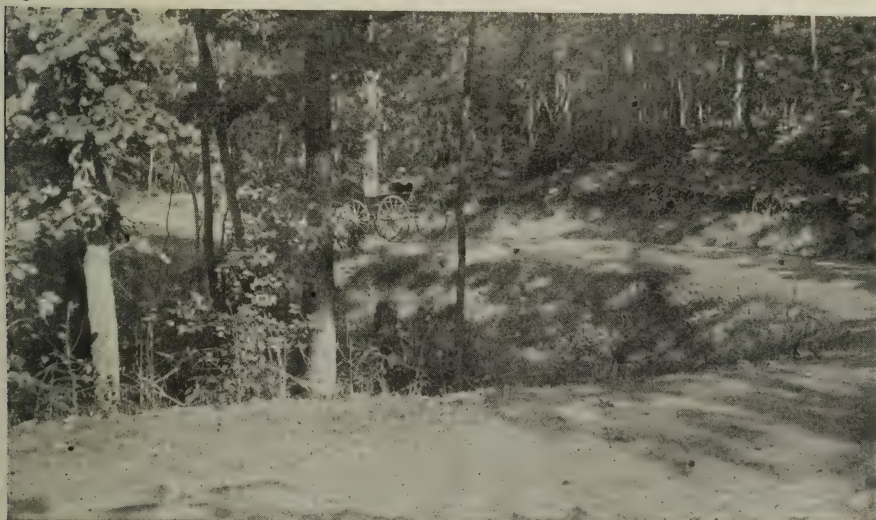
POULTRY SECTION.

Second Floor of Barn No. 1.

SECOND DAY—WEDNESDAY, MAY 22.

MORNING SESSION.

- 9:00—Poultry Interests of Tennessee and the South, Jas. B. Dismukes, Knoxville.



IMPROVED ROAD OVER MOUNTAINS IN ANDERSON COUNTY

- 9:45—Feed and Care of the Hen for Winter Egg Production, W. M. Landess, Fayetteville.
 10:30—Methods of Preventing Loss in the Marketing of Poultry and Eggs, H. C. Pierce, Nashville.
 11:15—Discussion.

THIRD DAY—THURSDAY, MAY 23.

MORNING SESSION.

- 9:00—Methods of Feeding and Care of Chickens from Hatching to Maturity, W. M. Landess.
 9:45—Discussion of the Most Prevalent Poultry Diseases on the Farm, Dr. M. Jacob, Knoxville.
 10:30—General Discussion of Various Subjects Relating to Farm Poultry. Led by J. A. Dinwiddie, New Market.

HORTICULTURAL SECTION.

Room 205, Morrill Hall.

SECOND DAY—WEDNESDAY, MAY 22.

MORNING SESSION.

- 9:00—The Farm Garden: How to Have Fresh Vegetables Throughout the Year, A. H. Dailey, Knoxville.
 9:30—The Irish Potato:
 The Potato on the Cumberland Plateau, J. E. Converse, Crossville.
 The Potato in Upper East Tennessee, D. J. Farthing, Butler.
 Two Crops of Potatoes a Year, A. J. Naugher, Pleasant Ridge.
 10:15—Beans the Summer Through, W. A. Masterson, Knoxville; Charles Emory, Knoxville; Paul Webb, Knoxville.
 11:00—The Earliest Strawberries on the Market, Peyton Carter, Knoxville.
 11:15—The Plan of the Farm, A. S. Adsmond, Knoxville.
 11:30—Cooperation in Trucking, Charles R. Coleman, Bearden.

THIRD DAY—THURSDAY, MAY 23.

AFTERNOON SESSION.

- 9:00—Peach Experiences, Jack Crowder, Kingston.
 9:30—Grapes for the Amateur Grower, Frank McClung, Knoxville.
 10:00—The Making of an Orchard, Prof. C. A. Keffer, University of Tennessee, Knoxville.
 10:45—Demonstration of Spraying Machinery, Prof. G. M. Bentley, University of Tennessee, Knoxville.
 11:30—Japanese Persimmons, T. C. Schnicke, Riverdale.

HOME-MAKING SECTION.

Tennessee Hall, 720 West Main Ave.

FIRST DAY—TUESDAY, MAY 21.

AFTERNOON SESSION.

- 2:00—Address, Mrs. James A. Reagan, Sweetwater.
 3:00—Household Conveniences, Mrs. J. Taylor Stratton, Madison.
 4:00—Demonstration of Cake Making.
 (A question box will be prepared, and some time during the session a discussion of questions relating to the home problems will be held.)

SECOND DAY—WEDNESDAY, MAY 22.

Morrill Hall, University Campus.

MORNING SESSION.

- 9:00—Girls' Tomato Club and Rural School Improvement, Miss Virginia P. Moore, Nashville.
- 9:45—The Kitchen Garden, Prof. C. A. Keffer, University of Tennessee.
- 10:30—Women of Other Lands (with stereopticon views), Mrs. Charles A. Perkins, Knoxville.
- 11:15—Business Session.

THIRD DAY—THURSDAY, MAY 23.

Tennessee Hall, 720 West Main Ave.

MORNING SESSION.

- 9:00—The Moral Training of Children, Miss Bessie Love, Sweetwater.
- 10:00—First Aid to the Housewife, Miss Catharine A. Mulligan, University of Tennessee, Knoxville.
- 11:00—Exhibit of Labor-Saving Devices and of the Work Done in the Home Economics Department of the University.

BOYS' CORN CLUB SECTION.

In Charge of C. F. Stripling, District Agent.

Second Floor of Barn No. 1.

FIRST DAY—TUESDAY, MAY 21.

AFTERNOON SESSION.

- 1:00—Address, Prof. O. B. Martin, Assistant in Charge of Boys' Corn Club Work, U. S. Department of Agriculture, Washington, D. C.
- 2:00—Influence of Tillage on Yield of Corn, H. D. Tate, State Agent, Jackson.
- 2:30—How to Select Your Ten Best Ears, J. C. Pridmore, University of Tennessee, Knoxville.
- 3:00—Score card judging of corn by the boys.
- 3:30—Visit around Experiment Station farm.

WORK FOR IMMIGRATION.

For the use of the Tennessee Bureau of Immigration in future campaigns, every county in the State should prepare and have printed in attractive form a booklet setting forth the advantages of each county and the opportunities offered homeseekers and investors. This work should be taken up at once by the County Bureaus of Immigration. The counties of Davidson, Rhea, Scott, and Warren had attractive booklets to be distributed with the exhibits sent into the North and Northwest in the early winter, and these counties are now reaping the fruits of their enterprise.

PROFITS IN POULTRY.

At the present time there are more than a half hundred periodicals published in the United States devoted exclusively to the promotion of poultry interests, while every farm paper and many of the daily and weekly papers of the country give liberal space to the subject. Besides many volumes have been published on the subject. These are indications of the extent and scope of the industry in the United States. Everywhere this industry is conducted on right principles it is found to be profitable. There is no State in the Union better suited to the poultry industry than Tennessee, and it is growing rapidly. This is especially true of East Tennessee. Morristown is one of the largest shipping points in the South for poultry and poultry products. With proper care and attention, this could be made a paying side line on every farm.

SOY BEANS.

Soy beans yield from $1\frac{1}{4}$ to 3 tons per acre of valuable hay. The ripened seed make a valuable concentrate—rich in protein as oil meal. Soy beans yield from 10 to 50 bushels per acre. The seed sells for \$2 per bushel.

RAISE THE AVERAGE.

The farmer should not be content with present conditions. He should strive this year for a larger yield per acre than he received last year. He should work for better surroundings for his family. The average of the farm home in Tennessee should be raised, as it should be in every State in the Union. Grass and trees and shrubs and flowers should brighten every farm home in the State. Books and magazines and daily papers and agricultural papers should be provided for the family reading. Conditions should be made such on the farm that the boys and girls will choose to remain there rather than go to the overcrowded cities. This can be done without any great expense, and it is a question that should engage the attention and study of every farmer in the State who has boys and girls.

AN AGE OF PROGRESS.

This is an age of progress, and this progress is not confined to the cities, but extends to all the farming communities of the country.

Agricultural experts are daily solving problems relating to the farm. Agricultural colleges, experiment stations, demonstration farms, agricultural special trains, with their experts and lecturers on the science of dairying, soil fertility and the conservation of moisture and other subjects are making farming not only more interesting but more profitable. Everything that relates to the farm and farm life has improved with the past few years, and the up-to-date farmer is keeping step with the march of progress.

TO INDUCE IMMIGRATION TO TENNESSEE.

Mr. J. J. B. Johnsonius, of Paris, Tenn., will be in the States of Iowa, Illinois, and Michigan during the month of May, in the interest of immigration to Tennessee. He is to represent in that territory the Tennessee Bureau of Immigration and the Nashville Industrial Bureau, and will make a special effort to induce the coming to Tennessee of those interested in the dairying industry. The opportunities for profit in this line in the bluegrass region of Tennessee, and especially in the vicinity of Nashville, will be emphasized by Mr. Johnsonius, and it is hoped by this means to materially increase and build up this industry.

THE RESPONSIBILITY OF THE FUTURE.

"The responsibility of the future lies largely in the teaching in the home and the school. Agriculture is the basis of all prosperity in America and fertility of the soil is the basis of agriculture. Not until two from four leaves four will the time come when you can take crops from the land year after year without putting something back. Had the scientific methods of today been applied fifty years ago to the wornout lands of the east they would be worth \$500 an acre today in place of \$15."—Dr. Cyril G. Hopkins, Illinois.

ROAD BUILDING IN TENNESSEE.

From present indications it will not be a great many years until Tennessee has a fine system of first-class highways stretching from east to west and north to south.

Since the meeting of the General Assembly in 1891, enabling acts have been passed authorizing, for road building purposes, the issuance of county bonds to the amount of \$16,840,000. Many counties have taken advantage of these enabling acts, have voted, issued and sold bonds, and already have good systems of highways. Several

counties have recently sold bonds, and engineers are now at work surveying and relocating roads. Last December Jackson County voted \$150,000 for good roads, and the bonds have been sold at a premium, and work has been begun on surveying the roads. During the same month Sumner County voted \$200,000 for the purpose of buying the turnpikes, and in a short while the tollgate will be only a memory in that county. Overton and Robertson Counties have also recently voted large sums for roads. Other counties are only waiting for enabling acts by the Legislature.



IMPROVED ROAD IN PUTNAM COUNTY

During the year 1911 alone thirty counties in the State voted bonds to the amount of about \$6,000,000.

No better indication of the growth of the sentiment for good roads in Tennessee could be found than is shown in the above figures.

Thomas Nelson Page, Chairman of the American Association for Highway Improvement, has issued a statement in which he says:

“Of all the material affairs of the country at present, the improvement of the public roads seems to me the most important and far-reaching. Every improvement of our roads is a direct increase in the value of property and a direct assistance toward the improvement, physically, morally and mentally, of our people. . . . Both urban and rural communities, of course, are interested vitally in roads, but the country is far more interested than the city, for good roads shorten the distance to the market, to the school, to the railway station, and



UNIMPROVED ROAD IN PUTNAM COUNTY

the country store, precisely so much as the road is improved. It is not too much to say that the agricultural land of the South would be more than double in value if the roads were only half as bad as they are.

“Our people need to be educated in this matter of good roads as much as on any other subject in the world, and the most important work perhaps that the American Association for Highway Improvement can perform is to establish clearly in the minds of our people that their personal interests are bound up with the improvement of their highways.

“It takes a long time to establish a new idea in the minds of a great conservative population; but this new idea is taking root among our people and will in time become established. The new ideas of farming are being introduced, which are already increasing materially the productivity of the soil and the knowledge of our farming population as to the value of improved methods, and it is as certain as any other law of nature that in time the improvement of the public roads will come. The only question is whether we shall allow this improvement to be postponed until our generation are all dead and buried, or whether we shall bring the improvement in our own time and get the benefits of it—whether we shall use our knowledge and our opportunities to give to the rising generation throughout the country the benefits which come directly from a great system of good roads opening the way to enlightenment and comfort of all kinds, or

whether we shall leave them to suffer from the want of such a system and possibly even from the want of knowledge that such improvement is essential."

FINANCES OF DEPARTMENT OF AGRICULTURE.

The quarterly report of Commissioner T. F. Peck, made to the Governor on March 19, shows receipts from the sale of pure seed stamps and fertilizer tags for the three months to amount to \$6,561.80, as follows: Sale of fertilizer tags, \$4,695.00; sale of pure seed stamps, \$1,866.80.

Following is the monthly report of Chief Clerk Emerson O. Luther, made March 31, 1912:

To His Excellency, Hon. Ben W. Hooper, Governor of Tennessee.

SIR: I submit herewith Financial Statement of the Department of Agriculture for the month ending March 31, 1912:

Pure Feed Account—

		Credits	Disburse- ments	Balance
Balance on hand.....	\$28,518 06			
Receipts	1,749 46	\$30,267 52	\$427 19	\$29,840 33
Pure Seed Account—				
Balance on hand.....	2,116 56			
Receipts	486 03	2,602 59	409 92	2,192 67
Fertilizer Account—				
Balance on hand.....	17,427 03			
Receipts	5,044 00	22,471 03	.....	22,471 03

		Balance on Hand	Disburse- ments	Balance
Apiary Inspector (Bien. Appr.)...	\$ 2,000 00	\$1,572 24	\$ 43 92	\$1,528 32
Entomology (Bien. Appr.).....	12,000 00	8,895 98	257 73	8,638 25
Institute Fund (Bien. Appr.)....	10,000 00	6,779 67	680 85	6,098 82
Office Expense (Bien. Appr.).....	6,000 00	4,331 84	1,195 48	3,136 36
Bureau of Immigra'n (Bien. Appr.)	10,000 00	6,184 99	1,407 23	5,777 76
Supplemental Fertilizer Account				
(Bien. Appr.)	5,000 00	4,132 85	865 40	3,267 45
Live Stock Dept. (Bien. Appr.)..	8,000 00	5,076 68	253 18	4,823 50

Respectfully,

EMERSON O. LUTHER, *Chief Clerk.*

Every time a toad is killed one of the best friends of the garden is destroyed. It is estimated that a healthy toad four years old will kill 10,000 insects during the season.

FEED BULLETIN.

The Feed Bulletin of the Department of Agriculture, which is now in preparation by A. L. Garrison, Chief Feed and Seed Inspector, will appear in the next issue of "Tennessee Agriculture," and it is desired to get this bulletin a wide circulation. Copies will be sent to all the delegates to the Farmers' Institutes in Tennessee.

THE AGRICULTURAL SPECIAL.

The agricultural demonstration train to be operated over the State by the Department of Agriculture will leave Nashville on July 1 and will be on the road more than two months. Arrangements are now being made for the operation of the train, and the schedule and programme will be announced in the June issue of this bulletin.

When the strawberries are off the vines remove the mulch and cultivate thoroughly to kill off the weeds and put the soil in fine condition.

If the soil leaves the plowshare shiny and wet, wait a day or two. Wet plowing makes cloddy ground.



FANCHER'S FALLS, WHITE COUNTY

NOTICE TO NEWSPAPER PUBLISHERS.

Several thousand copies of *Tennessee Agriculture* will be issued each month, but not enough, on account of limited appropriations for this work, to give it as wide circulation as desired. Therefore the Department of Agriculture asks the cooperation of the newspapers of the State in their liberal use of any or all the matter in the bulletins.

PUBLICATIONS OF DEPARTMENT OF AGRICULTURE.

The following publications have been issued by the Department of Agriculture and will be sent, until supply is exhausted, when request is accompanied by necessary postage:

- Tennessee Agriculture.** (Monthly Bulletin.) Vol. I, No. 1. 32 pages. Issued May 1, 1912. 2 cents.
- Facts About Tennessee.** Issued December, 1911. 52 pages. 2 cents.
- Map of Tennessee.** Showing Agricultural and Mineral Resources, Population and Educational Statistics, with Description of Counties. Issued 1912. 2 cents.
- Handbook of Agricultural Laws of Tennessee.** Issued October, 1911. 68 pages. 2 cents.
- Tabulated Analyses of Commercial Fertilizers.** Issued January, 1912. 50 pages. 2 cents.
- Seed Bulletin.** No. 1. Issued March, 1912. 18 pages. 1 cent.
- Proceedings Tenth Annual Session Middle Tennessee Farmers' Institute.** Dec. 5-7, 1911. 160 pages. 5 cents.
- Laws and Rules and Regulations Governing Live Stock Sanitary Control Work in Tennessee.** Issued April, 1912. 32 pages. 2 cents.
- Relation of the County Health Officer to the State Department of Agriculture.** By George R. White, M.D., D.V.S. 12 pages. 1 cent.
- Concentrated Commercial Feeding Stuffs.** Bulletin No. 2. May 15, 1911. 96 pages. 2 cents.
- Biennial Report Tennessee Department of Agriculture.** 1909-1910. 392 pages. 10 cents.
- Biennial Report Tennessee Department of Agriculture.** 1907-1908. 250 pages. 8 cents.
- Proceedings Thirteenth Annual Convention Association of Agricultural Workers of the South,** at Nashville, Dec. 11-13, 1911. 58 pages. 2 cents.
- Davidson County, Tennessee.** Descriptive booklet. 32 pages. 2 cents.
- Rhea County, Tennessee.** Descriptive Booklet. 32 pages. 2 cents.
- Scott County, Tennessee.** Descriptive Booklet. 32 pages. 1 cent.
- Warren County, Tennessee.** Descriptive Booklet. 16 pages. 1 cent.

TENNESSEE AGRICULTURE

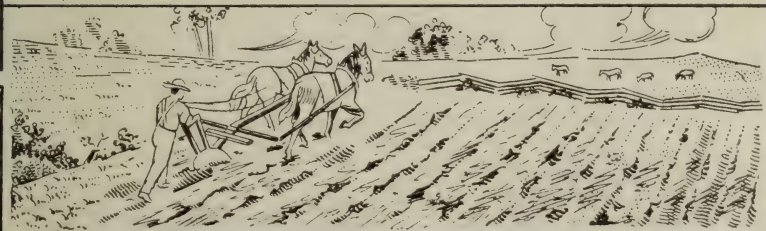
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VOL.
1.

NO.
2.

IN THIS ISSUE:

- Concentrated Commercial Feeding Stuffs.
- Tennessee Boys to be Entertained at State Fair.
- New Plans for Immigration Work.
- Summary of May Crop Report.



TENNESSEE AGRICULTURE

A Magazine Devoted to the Conservation and Development of the
Agricultural Interests of Tennessee

Published Monthly at Nashville by
THE DEPARTMENT OF AGRICULTURE
THOMAS F. PECK, Commissioner

Entered as Second-Class Matter May 7, 1912, at the Postoffice at Nashville, Tenn., under the
Act of June 6, 1900.

JUNE 1, 1912.

DEPARTMENT OF AGRICULTURE. STATE OF TENNESSEE.

THOMAS F. PECK, Commissioner.
E. O. LUTHER, Chief Clerk.
A. L. GARRISON, Chief Feed and Seed Inspector.
T. G. SETTLE, Statistician.
DR. GEORGE R. WHITE, State Live Stock Inspector.
A. H. TIPTON, Assistant Commissioner for East Tennessee.
JESSE TOMLINSON, Assistant Commissioner for Middle Tennessee.
R. T. DEBERRY, Assistant Commissioner for West Tennessee.
J. W. WYNN, Feed and Seed Inspector for East Tennessee.
NOBLE C. WHITE, Feed and Seed Inspector for Middle Tennessee.
PERCY H. BARBEE, Feed and Seed Inspector for West Tennessee.
G. M. BENTLEY, State Entomologist and Plant Pathologist.
HOYT N. HARDEMAN, Stenographer.

BUREAU OF IMMIGRATION. STATE OF TENNESSEE.

THOMAS F. PECK, Commissioner.
T. G. SETTLE, Statistician.
A. H. TIPTON, Assistant Commissioner for East Tennessee.
JESSE TOMLINSON, Assistant Commissioner for Middle Tennessee.
R. T. DEBERRY, Assistant Commissioner for West Tennessee.
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STATE GEOLOGICAL SURVEY.

DR. A. H. PURDUE, State Geologist.

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CONCENTRATED COMMERCIAL FEEDING STUFFS.

Report of the Chemist on Official Samples Furnished by the Department of Agriculture to May 1, 1912.

COMPILED BY A. L. GARRISON, CHIEF FEED AND SEED INSPECTOR.

(Feeding Stuffs Bulletin, No. 3.)

In submitting this report of about one-half the feeds on the Tennessee market, we calculate to make a departure from the custom that has been followed heretofore. Instead of only issuing one report for the year, we will publish two and thereby come more nearly, we believe, in keeping in touch with the actual feeding value of the various brands that are put on the market during the year. We have contracted with the chemist to make analyses any time they are presented. You will understand by this arrangement that the Inspectors can in their regular inspection work take an official sample here and there, and the manufacturer have no chance to know when and where the sample is to be taken; while it is not hard to understand that, if the manufacturers knew that official samples are to be taken during certain months, it would be a reasonably easy matter to place on the market for these particular months a better grade of feed, and for the remaining months they could let it be some lower. There are very few, if any, Tennessee manufacturers that would take advantage of a situation like this, but we deal with most all the States in this work, and with them we are not so well informed and must use precaution that the consumer of this commodity gets value received. The next report will contain those brands not included in this one.

ANALYSES OF SAMPLES.

Out of the 163 samples just returned from the chemist, 121 are above guarantee in protein, 89 high in fat, 41 high in fiber, 87 high in carbohydrates; 37 below guarantee in protein, 69 low in fat, 117 low in fiber, 70 low in carbohydrates.

In a great majority variation was so slight that the effect on the feeding value of the product would not be materially changed.

In these small numbers that failed to reach the guarantee the manufacturers have agreed and are now modifying their formulas so as to bring same up to the required standard.

MEANING OF GUARANTEE.

We are often asked by consumers to explain what is meant by the guarantee as shown on tag attached to each bag of feed stuff as required by law; per cent protein, fat, fiber and carbohydrates. I will endeavor to make this clear in the following:

The natural feeding stuffs, as well as the commercial by-products, taken separately, rarely, if ever, contain the various nutriments in the proper proportions to answer the purpose for which animals are fed. It has been shown by experiment that, for maintenance, for growth, and the production of force, fat, flesh, milk and wool, certain proportions of the organic nutrients are the best and most economical. Special attention must be called here to the fact that the total amount of the nutrients of a feeding stuff, as determined by chemical analysis, is no criterion of its food value. The true food value of a feeding stuff depends upon the amount of the various nutrients which are digested. In general, it may be stated that the lower the contents of fiber the higher the digestibility of the nutrients, and conversely the higher the content of fiber the lower the digestibility of the nutrients in a given feeding stuff. Hence the protein, fat and carbohydrates of such feeding stuffs as the cereals, bran, cotton seed and linseed meals and the like are much more largely digested than those of hay, straw, stover, chaff and hulls. From these considerations it is evident that in giving the proper proportions and amounts of nutrients for the various purposes for which animals are fed, only the digestible portion of the nutrients can be considered. The amounts of digestible nutrients best adapted for the various feeding purposes of farm animals, as determined by feeding experiments, are called feeding standards, and a mixture of feeding stuffs containing these prescribed amounts is a perfect food or ration.

CONCENTRATED FEEDING STUFFS.

Concentrated feeding stuffs are such which usually have a low content of fiber and a high content of digestible nutrients. They are articles of commerce and are embraced in the term commercial feeding stuffs. Some are rich in carbohydrates like the cereals; others are rich in protein like the legumes, cotton seed meal, linseed meal, malt sprouts, brewers' and distillers' grains, etc. Meat meal is rich in fat and protein. The same may be said of cotton seed meal and old process linseed meal.

The concentrated feeding stuffs are employed in feeding for the purpose of making balanced rations. By their judicious admixture to

inferior feeding stuffs rations can be prepared which comply with the standards established for various purposes. Thus the feeder is enabled to utilize the inferior feeding stuffs, which may be in his possession and which he could not profitably feed alone. Attention should be called here to numerous commercial feeding stuffs found upon the markets which contain large amounts of waste products, like oat hulls, corn-cobs and rice hulls, etc. These waste products have little or no food value. The mixtures are high in fiber and low in digestible nutrients, and cannot, therefore, be employed in preparing a balanced ration.

PROTEINS.

Protein is the most complicated of all the nutrients of a feeding stuff. It consists of the four elements—carbon, hydrogen, oxygen and nitrogen. It has its counterpart in the various nitrogenous bodies found in the animal system, and is the only source of these bodies. The function of protein, therefore, is chiefly to furnish the material for forming flesh, sinews, nerves, hair, hoofs, horns, casein of milk and many other nitrogenous bodies found in the animal economy. Protein may also be utilized for the production of energy and the formation of fat in animal body, but since it is the most expensive of all the nutrients, it should never be put to the latter uses, which can be accomplished as well by the cheaper non-nitrogenous nutrients, fat and carbohydrates.

FAT.

The function of the fat in a feeding stuff is two-fold. In the first place it can be directly assimilated and thus produce animal fat, and in the second place it may serve for the production of animal heat and energy. The energy produced by the digestible fat of feeding stuff is two and one-fourth times as great as that produced by an equal weight of carbohydrates.

The nitrogen-free extract of a feeding stuff is the difference between one hundred and the sum of the moisture, protein, fat, fiber and ash. The digestible portions of this, together with any digested fiber, are known as carbohydrates. Like the fat, the function of the digestible carbohydrates is two-fold. They may serve for the production of fat and other non-nitrogenous bodies in the animal system as well as for the production of energy.

MINERAL CONSTITUENTS.

It goes without saying that the inorganic or mineral constituents of a feeding stuff are essential for the formation of the bones in the animal body, as these consist of about 60 per cent of mineral matter.

Especially is this true for the young and growing animal. But this is not the only function of the inorganic nutrients. Their presence is absolutely essential in all the vital processes of nutrition and assimilation. The full-grown animal, therefore, whose bones are completely developed, requires a constant supply of these ingredients with its food in order to exist. Little attention is paid to these essential ingredients by the feeder of farm animals, since the natural feeding stuffs contain these nutrients in ample proportions excepting common salt.

BY-PRODUCTS.

Of late years there appeared among the concentrated commercial feeding stuffs a number of by-products which, from the method of their preparation, must necessarily be deficient in ash ingredients or inorganic nutrients. Among these may be mentioned brewers' grains, distillers' grains, starch refuse, and dried beet chips. All of these by-products have, in the process of manufacture, been exhausted with large volumes of water, and consequently the soluble salts of the ash ingredients must be largely extracted. These products should never be fed alone, and should only be the minor part of a ration in connection with other feeding stuffs of non-ash constituents.

The official samples used in this bulletin were taken from the following dealers and manufacturers:

LIST OF MANUFACTURERS.

Acme Milling Co., Talbott, Tenn.
Acme Poultry & Supply Co., Nashville, Tenn.
American Hominy Co., Indianapolis, Ind.
American Milling Co., Chicago, Ill.
American Steam Feed Co., Nashville, Tenn.
Arapaho Mill & Elevator Co., Arapaho, Okla.
A. C. Atchley, Maryville, Tenn.
Wm. Ausmus Co., LaFollette, Tenn.
Ballard & Ballard, Louisville, Ky.
Bellbuckle Milling Co., Bellbuckle, Tenn.
Bluff City Mills, Bluff City, Tenn.
Bramer Mills, Jefferson City, Tenn.
F. W. Brode & Co., Memphis, Tenn.
Geo. Brose, Evansville, Ind.
R. B. Brown Oil Co., St. Louis, Mo.
Burrough & Scott Milling Co., Bristol, Tenn.
F. B. Chamberlain Co., St. Louis, Mo.
Cornelius, Newbill & Co., Nashville, Tenn.
The Corno Mill Co., St. Louis, Mo.

Cattlettsburg Milling Co., Cattlettsburg, Tenn.
Crosby Milling Co., Louisville, Ky.
Dahnke Walker Milling Co., Union City, Tenn.
DeSoto Oil Co., Memphis, Tenn.
E. A. Dorris & Sons, Nashville, Tenn.
Edgar Morgan & Co., Memphis, Tenn.
J. & S. Emison, Vincennes, Ind.
Estill Springs Mill Co., Estill Springs, Tenn.
Excello Feed Milling Co., St. Joseph, Mo.
Farmers' Cotton Oil & Fertilizing Co., Huntsville, Ala.
Fayetteville Milling Co., Fayetteville, Tenn.
Forked Deer Milling Co., Dyersburg, Tenn.
Georgia Cotton Oil Co., Rome, Ga.
Gray & Hutcherson, Martin, Tenn.
Hartsville Milling Co., Hartsville, Tenn.
Haymarket Mills, Nashville, Tenn.
Hermitage Milling & Feed Co., Nashville, Tenn.
Hitch & Perry, Walland, Tenn.
Humboldt Milling Co., Humboldt, Tenn.
International Sugar Feed Co., Memphis, Tenn.
Jackett & Anderson, Covington, Tenn.
J. A. & O. L. Jones Mill & Elevator Co., Nashville, Tenn.
Jones & Rodgers, Memphis, Tenn.
Just Milling Co., Nashville, Tenn.
Korn Falfa Milling Co., Kansas City, Mo.
Joseph Lance, Morrison, Tenn.
Lebanon Feed & Grain Co., Lebanon, Tenn.
Lewis & Adcock, Knoxville, Tenn.
Liberty Mills, Nashville, Tenn.
Lone Mountain Mill Co., Lone Mountain, Tenn.
Marshall & Murray Milling Co., Madison Mills, Tenn.
J. C. McCullough, Cincinnati, Ohio.
McDonald & Harmon, Mohawk, Tenn.
McKenzie Milling Co., McKenzie, Tenn.
McLemore, Crutcher & Co., Nashville, Tenn.
Midland Roller Mills, Jackson, Tenn.
Monarch Milling Co., Elizabethton, Tenn.
W. D. Moon & Co., Memphis, Tenn.
W. W. Morehead, Nashville, Tenn.
Morehead & Young, Nashville, Tenn.
Edgar Morgan Co., Memphis, Tenn.
Mountain City Mill Co., Chattanooga, Tenn.
Nashville Roller Mills, Nashville, Tenn.
Newbern Flour Mills, Newbern, Tenn.
Newport Mill Co., Newport, Tenn.
Obion Mill & Elevator Co., Obion, Tenn.

G. E. Patterson & Co., Memphis, Tenn.
Peters & Bradley Milling Co., Knoxville, Tenn.
Phoenix Cotton Oil Co., Covington, Tenn.
Polk & Ballard Co., Boston, Mass.
Pulaski Grain & Milling Co., Pulaski, Tenn.
Raines, Connell & McFadden, Memphis, Tenn.
J. S. Reed, Morristown, Tenn.
Rome Oil & Fertilizer Co., Rome, Ga.
Royal Milling Co., Dyersburg, Tenn.
Scott Milling Co., Knoxville, Tenn.
Shelton Mills, Chattanooga, Tenn.
W. H. Small & Co., Evansville, Ind.
F. M. Smith, Oak Grove, Tenn.
J. A. Smith & Co., Knoxville, Tenn.
Sparger Mill Co., Bristol, Tenn.
Sparta Milling Co., Sparta, Tenn.
E. F. Spears & Co., Paris, Ky.
A. Stafford Milling Co., Martin, Tenn.
Standard Feed Mills, St. Louis, Mo.
Standard Feed Co., Atlanta, Ga.
Sugarine Co., Owensboro, Ky.
Tennessee Cotton Oil Co., Nashville, Tenn.
Tennessee Fiber Co., Memphis, Tenn.
Twin City Mill, Bristol, Tenn.
Union City Grain & Feed Co., Union City, Tenn.
Universal Milling Co., Lebanon, Tenn.
Valley Milling Co., St. Louis, Mo.
Jesse Walling Mills, McMinnville, Tenn.
Watauga Flour Mills, Elizabethton, Tenn.
Webb & Maury, Memphis, Tenn.
Dan C. Wheeler & Co., Chattanooga, Tenn.
W. H. Willard, Maryville, Tenn.
Winchester Milling Co., Winchester, Tenn.
Newport Produce Co., Newport, Tenn.
Ralston Purina Co., St. Louis, Mo.
Quaker Oats Co., Chicago, Ill.
Model Mill Co., Johnson City, Tenn.
Buckeye Cotton Oil Co., Charlotte, N. C.
Elba Manufacturing Co., Charlotte, N. C.
Limestone Roller Mills, Limestone, Tenn.
Greeneville Model Mills, Greeneville, Tenn.
Walker Milling & Produce Co., Sevierville, Tenn.
Harlan & Lowe Milling Co., Bardwell, Ky.
Troy Roller Mills, Troy, Tenn.
Quaker Oat Co., Chicago, Ill.
Good Luck Mill, St. Louis, Mo.

LIST OF DEALERS.

American Steam Feed Co., Nashville, Tenn.
Jim Andrews, Jr., Columbia, Tenn.
W. T. Arnold, Bristol, Tenn.
J. T. Akers, Morristown, Tenn.
A. C. Atchley, Maryville, Tenn.
Acme Stock & Poultry Supply Co., Nashville, Tenn.
Butler Grocery Co., McKenzie, Tenn.
W. J. Barton Feed Co., Johnson City, Tenn.
Banks & Powell, Newbern, Tenn.
C. R. Baird & Co., Chattanooga, Tenn.
Brooks & Lutz, Morristown, Tenn.
Bramer Mills, Jefferson City, Tenn.
Bluff City Mills, Bluff City, Tenn.
Bell Bros., Martin, Tenn.
Biles & Smith Hardware Co., McMinnville, Tenn.
Carter & Fowler, Huntingdon, Tenn.
Cherry Moss Grocery Co., Union City, Tenn.
J. G. Corzelius, Tullahoma, Tenn.
Dale Grain & Feed Co., Columbia, Tenn.
Davis & Susong Co., Knoxville, Tenn.
E. A. Dorris & Sons, Nashville, Tenn.
J. E. Ellenburg, Greeneville, Tenn.
John H. Eagle, Sparta, Tenn.
Felsenphal & Taun, Jackson, Tenn.
Will Fooshee & Co., Dyersburg, Tenn.
Gray & Hutcherson, Martin, Tenn.
Greenfield Produce Co., Greenfield, Tenn.
Greeneville Model Mills, Greeneville, Tenn.
E. P. Grissom, Union City, Tenn.
M. L. Grant, Winchester, Tenn.
Haymarket Mills, Nashville, Tenn.
Hermitage Mill & Feed Co., Nashville, Tenn.
M. F. Hopkins & Co., Elizabethton, Tenn.
J. S. Hurt & Co., Chattanooga, Tenn.
F. A. Hood & Co., Chattanooga, Tenn.
R. C. Halloway, Obion, Tenn.
Harrold Feed & Coal Co., Dyersburg, Tenn.
Hitch & Perry, Maryville, Tenn.
Hardy & Glass, Union City, Tenn.
H. T. Hackney & Co., Johnson City, Tenn.
Hackney, Broyles & Lackey Co., Knoxville, Tenn.
John H. Johnson & Son, Jackson, Tenn.
Jones & Rogers, Memphis, Tenn.
Jackett & Anderson, Covington, Tenn.
J. H. Longmire, LaFollette, Tenn.

Lewis & Adcock, Knoxville, Tenn.
Lebanon Grain & Feed Co., Lebanon, Tenn.
Lacien & Sons, Dyer, Tenn.
Lance & Earls, McMinnville, Tenn.
McLemore, Crutcher & Co., Nashville, Tenn.
Monarch Milling Co., Elizabethton, Tenn.
W. D. Moon & Son, Memphis, Tenn.
Moore & Co., Tullahoma, Tenn.
Morehead & Young, Nashville, Tenn.
Neal & Cash Co., Knoxville, Tenn.
Newport Produce Co., Newport, Tenn.
Newport Mill Co., Newport, Tenn.
Obion Mill & Elevator Co., Obion, Tenn.
Peters & Bradley Milling Co., Knoxville, Tenn.
Pulaski Grain & Milling Co., Pulaski, Tenn.
J. W. Quinn & Son, Nashville, Tenn.
A. C. Rainey & Co., Newbern, Tenn.
A. J. Rainey, Union City, Tenn.
Raines, Connell & McFadden, Memphis, Tenn.
J. S. Reed, Morristown, Tenn.
G. W. Robinson, Knoxville, Tenn.
Scott's Milling Co., Knoxville, Tenn.
Shelton Grain & Feed Co., Chattanooga, Tenn.
J. Allen Smith & Co., Knoxville, Tenn.
J. L. Smith, Jefferson City, Tenn.
Sparta Milling Co., Sparta, Tenn.
Stegall Feed Co., Chattanooga, Tenn.
Stovall Howell Co., Jackson, Tenn.
Taylor Grocery Co., Newport, Tenn.
The Cooperative Store Co., LaFollette, Tenn.
Trenton Produce Co., Trenton, Tenn.
Tucker Moseby Seed Co., Memphis, Tenn.
Tucker & Walker, Obion, Tenn.
John A. Tyner & Co., Nashville, Tenn.
Universal Milling Co., Lebanon, Tenn.
W. G. Wallis, Nashville, Tenn.
R. H. Worke & Co., Nashville, Tenn.
Walker Milling & Produce Co., Sevierville, Tenn.
Walker & Teague, Jackson, Tenn.
J. B. Worley, Johnson City, Tenn.
Dan C. Wheeler & Co., Chattanooga, Tenn.
Watauga Flour Mills, Elizabethton, Tenn.
W. H. Willard, Maryville, Tenn.
J. E. White, Greenfield, Tenn.
Whitset & Bush, Nashville, Tenn.
Bevalt Wilkinson, Morristown, Tenn.

CHEMIST'S REPORT ON COMMERCIAL FEED STUFF SAMPLES FURNISHED BY THE DEPARTMENT OF AGRICULTURE.

Inspector's Number	NAME OF FEEDSTUFF	NAME OF MANUFACTURER	MERCHANT OR AGENT SELLING SAME	Sample Drawn by Inspector	ANALYSIS	Protein Per Cent	Rat Per Cent	Fiber Per Cent	Carbohydrates Per Cent
29	Alfalfa Meal	Arapaho Mill & Elev. Co., Arapaho, Okla.....	Raines, Connel & McFadden, Memphis, Tenn....	Barbee	Guaranteed..	13.50	1.75	.30	36
31	Pure Wheat Bran and Shorts	A. C. Atchley, Maryville, Tenn.	A. C. Atchley, Maryville, Tenn.	Wynn	Guaranteed..	14.50	4.00	8.00	55.00
					Found.....	17.38	4.05	6.76	57.06
55	Acme Feed.....	Acme Milling Co., Talbot, Tenn.	J. T. Akers, Morristown, Tenn.	Wynn	Guaranteed..	12.94	5.07	7.39	59.21
					Found.....	14.74	6.33	6.00	55.30
28	Ship Stuff	J. Allen Smith & Co., Knoxville, Tenn.	J. Allen Smith & Co., Knoxville, Tenn.	Wynn	Guaranteed..	16.50	4.00	7.00	58.00
					Found.....	15.45	3.48	8.33	56.97
26	Pure Wheat Bran...	J. Allen Smith & Co., Knoxville, Tenn.	J. Allen Smith & Co., Knoxville, Tenn.	Wynn	Guaranteed..	15.50	4.00	9.50	50.00
					Found.....	17.02	3.79	9.85	50.00
49	LaFollette Feed ...	W. M. Ausmus, LaFollette, Tenn.	The Cooperative Store Co., LaFollette, Tenn.	Wynn	Guaranteed..	14.57	4.18	6.51	55.00
					Found.....	13.60	3.59	7.65	59.18
25	Peerless Feed	J. Allen Smith & Co., Knoxville, Tenn.	J. Allen Smith & Co., Knoxville, Tenn.	Wynn	Guaranteed..	15.00	4.00	7.00	58.00
					Found.....	15.07	4.25	5.60	60.92
85	Acme Chick Feed..	Acme Stock & Poultry Sup. Co., Nashville, Tenn....	Acme Stock & Poultry Sup. Co., Nashville, Tenn....	White	Guaranteed..	11.69	4.37	2.53	58.46
					Found.....	11.06	2.55	2.75	69.36

Inspector's Number	NAME OF FEEDSTUFF	NAME OF MANUFACTURER	MERCHANT OR AGENT SELLING SAME	Sample Drawn by Inspector	ANALYSIS	Protein Per Cent	Fat Per Cent	Fiber Per Cent	Carbhy- drates Per Cent
86	Acme Dry Mash ...	Acme Stock & Poultry Sup. Co., Nashville, Tenn....	Acme Stock & Poultry Sup. Co., Nashville, Tenn....	White	Guaranteed.. Found.....	20.06 20.71	6.61 3.26	8.50 7.63	45.50 50.77
87	Mash Feed	Acme Stock & Poultry Sup. Co., Nashville, Tenn....	Acme Stock & Poultry Sup. Co., Nashville, Tenn....	White	Guaranteed.. Found.....	18.00 20.80	3.50 3.50	10.00 5.25	40.00 40.20
42	Homco Feed	American Hominy Co., Indianapolis, Ind.	R. H. Worke & Co., Nashville, Tenn.	White	Guaranteed.. Found.....	9.05 10.44	7.00 6.12	7.00 4.58	67.89 67.39
62	Cooked Cow Feed..	American Steam Feed Co., Nashville, Tenn.	American Steam Feed Co., Nashville, Tenn.	White	Guaranteed.. Found.....	26.00 33.26	7.50 5.61	10.00 11.27	44.00 36.77
63	Cooked Horse Feed.	American Steam Feed Co., Nashville, Tenn.	American Steam Feed Co., Nashville, Tenn.	White	Guaranteed.. Found.....	11.50 14.57	5.48 5.43	8.05 6.53	60.76 59.79
17	Homcoline	American Hominy Co., Indianapolis, Ind.	Lewis & Adcock, Knoxville, Tenn.	Wynn	Guaranteed.. Found.....	16.00 20.36	6.50 6.93	10.00 3.83	60.00 52.25
72	Sucrene Dairy Feed.	American Milling Co., Chicago, Ill.	J. W. Quinn & Son, Nashville, Tenn.	White	Guaranteed.. Found.....	16.50 19.04	3.50 4.68	12.00 11.43	46.00 46.53
34	Beaver Creek Feed.	Burrough & Scott Milling Co., Bristol, Tenn.	W. T. Arnold, Bristol, Tenn.	Wynn	Guaranteed.. Found.....	14.58 15.80	4.44 4.23	6.30 9.30	60.00 54.08
59	Bran and Shorts...	Banner Mills, Jefferson City, Tenn....	Banner Mills, Jefferson City, Tenn....	Wynn	Guaranteed.. Found.....	15.00 18.69	4.00 3.89	7.50 5.50	55.00 56.63

7	Mixed Feed.....	Catlettsburg Milling Co., Catlettsburg, Tenn. ...	Davis & Susong, Knoxville, Tenn.	Wynn	Guaranteed.. Found.....	16.94 15.80	4.01 4.34	6.42 4.41	56.65 61.75
75	Booster Dairy Feed.	Cornelius, Newbill & Co., Nashville, Tenn.	Whitsitt & Bush, Nashville, Tenn.	White	Guaranteed.. Found.....	21.00 20.53	4.00 5.40	7.00 10.69	43.00 46.82
74	Booster Chicken Feed	Cornelius, Newbill & Co., Nashville, Tenn.	Whitsett & Bush, Nashville, Tenn.	White	Guaranteed.. Found.....	11.41 10.79	2.88 4.57	1.99 1.56	68.75 65.35
45	Linseed Meal	Robt. B. Brown Oil Co., St. Louis, Mo.	R. H. Worke & Co., Nashville, Tenn.	White	Guaranteed.. Found.....	33.00 35.19	8.00 6.96	7.00 7.39	..... 34.80
18	Bellbuckle Feed....	Bellbuckle Milling Co., Bellbuckle, Tenn.....	J. C. Corzelious, Tulahoma, Tenn.	White	Guaranteed.. Found.....	14.04 15.27	4.61 3.66	6.42 9.01	55.00 57.73
43	Buckeye Cotton Seed Meal	Buckeye Cotton Oil Co., Charlotte, N. C.	H. T. Hackney & Co., Johnson City, Tenn. ...	Wynn	Guaranteed.. Found.....	38.41 42.56	6½-7 8.96	8-10 7.47	..... 26.91
36	Ballard Bran	Ballard & Ballard, Louisville, Ky.	M. F. Hopkins & Co., Elizabethton, Tenn. ...	Wynn	Guaranteed.. Found.....	14.50 15.80	4.10 3.76	9.00 5.87	53.00 55.90
35	Bluff City Feed....	Bluff City Mills, Bluff City, Tenn.	Bluff City Mills, Bluff City, Tenn.	Wynn	Guaranteed.. Found.....	15.00 17.29	4.00 4.33	8.00 8.24	55.00 53.03
68	Dandy Red Dog Middlings	Crosby Milling Co., Louisville, Ky.	Morehead & Young, Nashville, Tenn.	White	Guaranteed.. Found.....	16.00 17.55	4.00 3.88	5.00 3.86	60.00 60.48

Inspector's Number	NAME OF FEEDSTUFF	NAME OF MANUFACTURER	MERCHANT OR AGENT SELLING SAME	Sample Drawn by Inspector	ANALYSIS	Protein Per Cent	Fat Per Cent	Fiber Per Cent	Carbohydrates Per Cent
21	Cotton Seed Meal..	DeSoto Oil Co., Memphis, Tenn.	Jones & Rodgers, Memphis, Tenn.	Barbee	Guaranteed... Found.....	38.62 42.03	8.00 8.00	12.00 6.80	25.00 24.11
7	Wheat Bran	Dahnke, Walker Milling Co., Union City, Tenn..	E. P. Grisson, Union City, Tenn.	Barbee	Guaranteed... Found.....	14.50 14.22	4.00 3.50	9.50 8.34	55.00 58.19
59	Excello Molasses Feed	Excello Feed Milling Co., St. Joseph, Mo.	McLemore, Crutcher & Co., Nashville, Tenn. ...	White	Guaranteed... Found.....	12.00 9.17	1.66 1.19	25.00 16.63	39.00 47.46
22	Ear Corn Feed	Estill Springs Mill Co., Estill Springs, Tenn....	Moore & Co., Tullahoma, Tenn.	White	Guaranteed... Found.....	8.05 7.55	3.05 3.32	6.06 7.40	64.06 71.63
2	Corno Hen Feed...	Corno Mills Co., St. Louis, Mo.	Trenton Produce Co., Trenton, Tenn.	Barbee	Guaranteed... Found.....	10.00 10.27	3.50 2.88	5.00 1.75	68.00 74.13
1	Corn Chicken Feed.	Corno Mill Co., St. Louis, Mo.	Trenton Produce Co., Trenton, Tenn.	Barbee	Guaranteed... Found.....	10.75 10.53	2.75 3.01	3.00 2.70	68.00 72.05
31	Acorn Hen Feed...	F. B. Chamberlain Co., St. Louis, Mo.	Tucker & Walker, Obion, Tenn.	Barbee	Guaranteed... Found.....	10.00 10.35	3.50 4.30	6.00 2.51	..... 67.73
73	Wheat and Corn Offal	E. A. Dorris & Sons, Nashville, Tenn.	E. A. Dorris & Sons, Nashville, Tenn.	White	Guaranteed... Found.....	12.00 14.39	4.50 6.35	8.50 4.80	51.50 60.43

71	Chicken Feed	E. A. Dorris & Sons, Nashville, Tenn.	J. W. Quinn & Son, Nashville, Tenn.	White	Guaranteed... Found.....	8.52 8.60	2.15 3.20	8.25 1.87	67.50 65.28
65	Kiln Dried Sampson Feed	J. & S. Emison & Co., Vincennes, Ind.	J. S. Hurt & Co., Chattanooga, Tenn.	Wynn	Guaranteed... Found.....	10.00 11.06	4.00 3.95	8.00 8.22	65.00 61.38
33	Our Feed	Forked Deer Milling Co., Dyersburg, Tenn.	Harrold Feed & Coal Co., Dyersburg, Tenn.	Barbee	Guaranteed... Found.....	15.47 15.01	3.75 6.35	7.27 7.87	58.86 54.79
15	Prime Cotton Seed Meal	Farmers' Cotton Oil & Fer- tilizer Co., Huntsville, Ala.	John H. Eagle, Sparta, Tenn.	White	Guaranteed... Found.....	38.62 40.10	7.38 8.89	10.00 8.24	30.25 30.03
5	Wheat Bran, Corn Bran, Shorts and Screenings	Forked Deer Milling Co., Dyersburg, Tenn.	A. C. Rainey & Co., Newbern, Tenn.	Barbee	Guaranteed... Found.....	15.47 16.94	3.79 5.39	7.27 6.69	58.86 56.43
3	Wheat and Corn Bran	Forked Deer Roller Mills Co., Trenton, Tenn.	Trenton Produce Co., Trenton, Tenn.	Barbee	Guaranteed... Found.....	15.27 14.39	4.81 3.45	7.34 9.39	56.28 58.20
23	Gin Scratch Feed..	Edgar Morgan Co., Memphis, Tenn.	W. D. Moon & Sons, Memphis, Tenn.	Barbee	Guaranteed... Found.....	10.00 11.76	3.50 2.97	4.00 1.99	65.00 66.36
44	Cotton Seed Feed...	Elba Mfg. Co., Charlotte, N. C.	H. T. Hackney & Co., Johnson City, Tenn. ...	Wynn	Guaranteed... Found.....	10.00 14.22	2.50 2.62	40.00 45.05	70.00 64.72
37	Cotton Seed Meal..	Elba Mfg. Co., Charlotte, N. C.	M. F. Hopkins, Elizabethton, Tenn.	Wynn	Guaranteed... Found.....	38.62 42.56	6.00 7.56	12.00 8.68	30.00 28.24

Inspector's Number	NAME OF FEEDSTUFF	NAME OF MANUFACTURER	MERCHANT OR AGENT SELLING SAME	Sample Drawn by Inspector	ANALYSIS	Protein Per Cent	Fat Per Cent	Fiber Per Cent	Carbohy- drates Per Cent
35	Manna Rice, Special Chick Feed	Edgar Morgan & Co., Memphis, Tenn.	Will Foshee & Co., Dyersburg, Tenn.	Barbee	Guaranteed..	11.00	3.50	4.00	65.00
70	Blue Diamond Little Chick Feed	J. & S. Emison, Vincennes, Ind.	C. R. Baird & Co., Chattanooga, Tenn.	Wynn	Found.....	12.72	2.96	3.97	64.77
68	Wheat Bran	Fayetteville Milling Co., Fayetteville, Tenn.	C. R. Baird & Co., Chattanooga, Tenn.	Wynn	Guaranteed..	10.00	4.00	8.50	65.00
17	Good Luck Mill Feed	Good Luck Mills, St. Louis, Mo.	C. R. Baird & Co., Chattanooga, Tenn.	Wynn	Found.....	15.17	4.58	9.14	53.36
39	Pure Wheat Bran...	George Brose, Evansville, Ind.	J. E. White, Greenfield, Tenn.	Barbee	Guaranteed..	10.00	3.60	6.00	.....
46	West Tennessee Dairy Feed	Gray & Hutcherson, Martin, Tenn.	W. J. Barton Feed Co., Johnson City, Tenn. ...	Wynn	Found.....	10.44	3.39	2.27	68.05
46	Pure Wheat Bran...	Gray & Hutcherson, Martin, Tenn.	W. J. Barton Feed Co., Johnson City, Tenn. ...	Wynn	Guaranteed..	15.47	3.33	8.91	53.32
46	Pure Wheat Bran...	Greeneville Model Mills, Greeneville, Tenn.	Gray & Hutcherson, Martin, Tenn.	Barbee	Found.....	17.02	3.76	8.00	54.35
19	Cotton Seed Meal..	Georgia Cotton Oil Co., Rome, Ga.	Gray & Hutcherson, Martin, Tenn.	Wynn	Guaranteed..	13.00	3.50	29.00	42.13
			Gray & Hutcherson, Martin, Tenn.	Barbee	Found.....	26.24	3.39	13.49	36.62
			Greeneville Model Mills, Greeneville, Tenn.	Wynn	Guaranteed..	15.00	6.00	8.00	.....
			Greeneville, Tenn.	Wynn	Found.....	17.20	3.25	9.33	55.42
			Lewis & Adcock, Knoxville, Tenn.	Wynn	Guaranteed..	38.62	10.50	7.50	40.00
			Knoxville, Tenn.	Wynn	Found.....	42.39	7.55	6.40	29.59

30	Little River Mill Feed	Hitch & Perry, Walland, Tenn.	Hitch & Perry, Maryville, Tenn.	Wynn	Guaranteed.. Found.....	18.87 16.94	4.86 4.27	7.59 6.59	54.74 57.71
14	Bran	Harlan Lowe Milling Co., Bardwell, Ky.	A. J. Ramey, Union City, Tenn.	Barbee	Guaranteed.. Found.....	14.22 17.29	4.43 4.34	4.80 5.73	52.00 53.45
44	Wheat Bran	Humboldt Milling Co., Humboldt, Tenn.	Stovall Howell Co., Jackson, Tenn.	Barbee	Guaranteed.. Found.....	14.25 15.53	3.75 3.79	10.00 10.54	52.00 53.68
57	Pure Corn Bran....	Haymarket Mills, Nashville, Tenn.	Haymarket Mills, Nashville, Tenn.	White	Guaranteed.. Found.....	9.53 10.79	8.21 6.62	9.28 7.27	62.99 63.81
56	Chicken Feed	Haymarket Mills, Nashville, Tenn.	Haymarket Mills, Nashville, Tenn.	White	Guaranteed.. Found.....	10.67 10.79	3.83 3.25	3.68 1.57	68.49 68.78
53	Chicken Feed	Hermitage Mill & Feed Co., Nashville, Tenn.	Hermitage Mill & Feed Co., Nashville, Tenn.	White	Guaranteed.. Found.....	10.00 10.35	3.50 3.68	5.00 1.61	68.00 69.66
48	Pure Wheat Middings	Hartsville Milling Co., Hartsville, Tenn.	John A. Tyner & Co., Nashville, Tenn.	White	Guaranteed.. Found.....	13.86 16.15	2.28 3.89	1.41 4.34	68.53 59.92
3	Horse and Mule Feed	International Sugar Feed Co. No. 2, Memphis, Tenn.	Hackney, Broyles & Lackey Co., Knoxville, Tenn.	Wynn	Guaranteed.. Found.....	12.05 13.86	3.05 4.46	12.00 10.75	50.00 56.06
2	Cow Feed	International Sugar Feed Co. No. 2, Memphis, Tenn.	Hackney, Broyles & Lackey Co., Knoxville, Tenn.	Wynn	Guaranteed.. Found.....	16.05 20.62	3.05 5.59	12.00 9.81	52.50 48.70

Inspector's Number	NAME OF FEEDSTUFF	NAME OF MANUFACTURER	MERCHANT OR AGENT SELLING SAME	Sample Drawn by Inspector	ANALYSIS	Protein Per Cent	Fat Per Cent	Fiber Per Cent	Carbohydrates Per Cent
9	International Horse and Mule Feed...	International Sugar Feed Co. No. 2, Memphis, Tenn.	Butler 'Groc. Co., McKenzie, Tenn.	Barbee	Guaranteed.. Found.....	..... 12.34	..... 4.25	..... 9.14	..... 53.96
10	International Cow Feed	International Sugar Feed Co. No. 2, Memphis, Tenn.	Butler 'Groc. Co., McKenzie, Tenn.	Barbee	Guaranteed.. Found.....	16.50 12.80	3.50 3.15	12.00 9.88	52.00 52.67
50	Wheat Bran	J. A. & O. L. Jones Mill & Elevator Co., Nashville, Tenn.	John A. Tyner & Co., Nashville, Tenn.	White	Guaranteed.. Found.....	15.50 15.01	4.00 4.80	8.00 7.71	55.00 54.87
49	Horse and Mule Feed	Just Milling & Feed Co., Nashville, Tenn.	John A. Tyner & Co., Nashville, Tenn.	White	Guaranteed.. Found.....	10.00 10.88	3.20 3.97	10.00 10.73	64.00 62.14
47	Bell Cow Feed.....	Just Milling & Feed Co., Nashville, Tenn.	John A. Tyner & Co., Nashville, Tenn.	White	Guaranteed.. Found.....	14.17 19.83	3.05 3.41	10.00 10.90	58.00 47.70
46	Germo	Just Milling & Feed Co., Nashville, Tenn.	John A. Tyner & Co., Nashville, Tenn.	White	Guaranteed.. Found.....	9.00 7.28	3.75 1.32	2.00 1.00	68.00 73.26

8	Home Scratch Feed.	Just Milling & Feed Co., Nashville, Tenn.	Lance & Earls, McMinnville, Tenn.	White	Guaranteed.. Found.....	10.00 11.06	4.00 4.27	3.75 2.85	66.00 71.42
9	Bran	Jesse Walling Mills, McMinnville, Tenn.	Lance & Earls, McMinnville, Tenn.	White	Guaranteed.. Found.....	13.69 16.23	4.89 4.55	6.90 7.15	59.21 59.21
10	Bran	Joseph Lance, R. 5, Morrison, Tenn.	Biles & Smith Hdw. Co., McMinnville, Tenn.	White	Guaranteed.. Found.....	..... 14.48	..... 3.74	..... 5.56	..... 63.20
32	Horse and Mule Feed	Just Milling & Feed Co., Nashville, Tenn.	Dale Grain & Feed Co., Columbia, Tenn.	White	Guaranteed.. Found.....	10.00 11.06	3.20 2.83	10.00 13.40	64.00 57.95
22	Jones' Cow Feed...	Jones & Rodgers, Memphis, Tenn.	Jones & Rodgers, Memphis, Tenn.	Barbee	Guaranteed.. Found.....	17.00 20.53	5.00 4.52	16.00 5.37	50.00 51.08
20	Croesus Feed	Jones & Rodgers, Memphis, Tenn.	Jones & Rodgers, Memphis, Tenn.	Barbee	Guaranteed.. Found.....	14.00 16.76	5.00 3.85	9.00 3.16	55.00 57.50
19	Peerless Hen Feed.	Jones & Rodgers, Memphis, Tenn.	Jones & Rodgers, Memphis, Tenn.	Barbee	Guaranteed.. Found.....	10.00 10.88	3.50 2.70	4.00 1.43	60.00 68.68
27	Dixie Scratch Feed.	Just Milling & Feed Co., Nashville, Tenn.	J. Allen Smith & Co., Knoxville, Tenn.	Wynn	Guaranteed.. Found.....	10.00 9.56	3.00 3.35	4.60 2.46	64.00 69.68
39	Cremo Horse and Mule Feed	Jacket & Anderson, Covington, Tenn.	Jacket & Anderson, Covington, Tenn.	Barbee	Guaranteed.. Found.....	10.23 12.72	4.44 5.22	5.33 4.63	64.55 62.29

Inspector's Number	NAME OF FEEDSTUFF	NAME OF MANUFACTURER	MERCHANT OR AGENT SELLING SAME	Sample Drawn by Inspector	ANALYSIS	Protein Per Cent	Fat Per Cent	Fiber Per Cent	Carb- hy- drates Per Cent
8	Big Deal Cow Feed.	Jacket & Anderson, Covington, Tenn.	Jacket & Anderson, Covington, Tenn.	Barbee	Guaranteed..	13.73	3.59	28.03	41.13
36	Dixie Crushed Ear Corn Feed	Jacket & Anderson, Covington, Tenn.	Jacket & Anderson, Covington, Tenn.	Barbee	Guaranteed..	7.40	3.67	8.89	65.62
					Found.....	7.55	3.44	8.46	66.92
20	Kornfalfa Feed	Korn Falfa Feed Milling Co., Kansas City, Mo...	Neil & Cash Co., Knoxville, Tenn.	Wynn	Guaranteed..	11.00	3.50	12.00	60.00
					Found.....	11.67	3.38	5.52	65.67
21	Kluck Poultry Feed.	Korn Falfa Feed Milling Co., Kansas City, Mo...	Neil & Cash Co., Knoxville, Tenn.	Wynn	Guaranteed..	10.00	3.25	4.50	60.00
					Found.....	12.02	3.00	1.46	70.33
15	Our Gluten Meal...	Lewis & Adcock, Knoxville, Tenn.	Lewis & Adcock, Knoxville, Tenn.	Wynn	Guaranteed..	16.00	4.00	10.00	60.00
					Found.....	18.60	8.96	3.05	53.30
14	Cracker-Jack Mixed Feed	Lewis & Adcock, Knoxville, Tenn.	Lewis & Adcock, Knoxville, Tenn.	Wynn	Guaranteed..	10.00	4.00	10.00	60.00
					Found.....	11.76	4.05	4.00	66.95
13	Hot Scotch Hen Feed	Lewis & Adcock, Knoxville, Tenn.	Lewis & Adcock, Knoxville, Tenn.	Wynn	Guaranteed..	10.00	3.70	2.30	70.00
					Found.....	11.23	3.45	1.57	70.97
12	Cow Cot—A Mixed Feed	Lewis & Adcock, Knoxville, Tenn.	Lewis & Adcock, Knoxville, Tenn.	Wynn	Guaranteed..	20.00	4.00	10.00	45.00
					Found.....	24.39	5.93	10.21	44.28

11	True Tag Mixed Feed	Lewis & Adcock, Knoxville, Tenn.				Guaranteed..	10.00	4.00	10.00	60.00
						Found.....	12.46	3.94	5.50	63.69
55	Wheat Bran	Liberty Mills, Nashville, Tenn.								
78	Universal Horse and Mule Feed	Lebanon Feed & Grain Co., Lebanon, Tenn.			White	Guaranteed..	14.50	4.00	8.00	50.00
						Found.....	15.09	3.39	10.12	54.19
18	Cracked Corn	Lewis & Adcock, Knoxville, Tenn.			White	Guaranteed..	11.50	4.75	12.00	62.00
						Found.....	13.34	3.14	3.95	61.66
45	Bob White Feed....	Limestone Roller Mills, Limestone, Tenn.			Wynn	Guaranteed..	9.00	4.00	3.00	65.00
						Found.....	9.92	4.10	1.45	71.39
54	Lone Mountain Mill Feed	J. E. Ellenburg, Greeneville, Tenn.			Wynn	Guaranteed..	15.00	4.40	7.40	56.29
						Found.....	16.06	3.60	5.31	60.58
8	Feed Bran	McKenzie Milling Co., McKenzie, Tenn.			Wynn	Guaranteed..	15.00	4.00	7.00	52.00
						Found.....	16.67	4.17	6.83	55.74
16	Owl Brand Cotton Seed Meal	Butler Groc. Co., Morristown, Tenn.			Barbee	Guaranteed..	15.81	4.32	6.67	58.22
						Found.....	14.74	3.60	6.19	60.34
58	Cow Feed	F. W. Brode & Co., Memphis, Tenn.			Wynn	Guaranteed..	41.00	6.00	10.00	22.00
						Found.....	43.97	10.23	3.35	28.45
		McLemore, Crutcher & Co., Nashville, Tenn.			White	Guaranteed..	21.75	5.46	14.36	41.34
						Found.....	20.18	4.47	11.51	46.59

Inspector's Number	NAME OF FEEDSTUFF	NAME OF MANUFACTURER	MERCHANT OR AGENT SELLING SAME	Sample Drawn by Inspector	ANALYSIS	Protein Per Cent	Fat Per Cent	Fiber Per Cent	Carbhy- drates Per Cent
67	Rock City Horse Feed	W. W. Morehead, Nashville, Tenn.	Morehead & Young, Nashville, Tenn.	White	Guaranteed.. Found.....	12.00 10.79	7.00 3.45	7.00 10.18	55.00 59.95
66	Cooked Cow Feed..	Morehead & Young, Nashville, Tenn.	Morehead & Young, Nashville, Tenn.	White	Guaranteed.. Found.....	26.00 13.78	7.50 4.59	7.00 21.52	44.00 46.08
61	Alfalfa Horse Feed.	McLemore, Crutcher & Co., Nashville, Tenn.	McLemore, Crutcher & Co., Nashville, Tenn.	White	Guaranteed.. Found.....	12.02 10.44	4.67 2.87	14.07 5.17	53.30 64.52
60	Chicken Feed	McLemore, Crutcher & Co., Nashville, Tenn.	McLemore, Crutcher & Co., Nashville, Tenn.	White	Guaranteed.. Found.....	11.40 10.27	4.70 2.96	3.60 1.93	68.30 68.18
71	Bell	J. Chas. McCullough, Cincinnati, Ohio.	Stegall Feed Co., Chattanooga, Tenn.	Wynn	Guaranteed.. Found.....	10.00 11.76	3.00 4.94	11.00 5.34	..... 55.15
30	Mixed Bran	Marshall & Murray Milling Co., Madison Mills, Tenn.	Jim Andrews, Jr., Columbia, Tenn.	White	Guaranteed.. Found.....	15.75 15.80	4.22 4.54	8.35 9.54	56.24 54.99
25	Moon Sugar Feed..	W. D. Moon & Son, Memphis, Tenn.	W. D. Moon & Son, Memphis, Tenn.	Barbee	Guaranteed.. Found.....	11.65 12.39	3.50 2.55	11.04 12.21	64.00 50.02
42	Model Mill Feed....	Model Mill Co., Johnson City, Tenn. ...	J. B. Warley, Johnson City, Tenn. ...	Wynn	Guaranteed.. Found.....	14.70 16.85	4.00 4.25	7.15 9.08	55.00 54.65

41	Wheat Bran	Midland Roller Mills, Jackson, Tenn.	Filsenphal & Tawn, Jackson, Tenn.	Barbee	Guaranteed.. Found.....	16.08 15.36	3.92 4.37	6.24 5.66	58.79 59.08
73	Monarch Feed.....	Monarch Milling Co., Elizabethton, Tenn.	Monarch Milling Co., Elizabethton, Tenn.	Wynn	Guaranteed.. Found.....	15.40 15.80	4.00 4.22	9.00 8.25	55.00 53.44
61	Mixed Feed	Mountain City Mill Co., Chattanooga, Tenn.	Dan C. Wheeler & Co., Chattanooga, Tenn.	Wynn	Guaranteed.. Found.....	12.00 13.16	5.00 5.10	7.00 6.53	60.00 57.41
53	Lick Creek's Best Feed	McDonald & Harmon, Mohawk, Tenn.	Bevauld Wilkerson, Morristown, Tenn.	Wynn	Guaranteed.. Found.....	14.00 14.39	4.00 4.88	8.00 7.52	55.00 56.22
1	Wheat Bran	Nashville Roller Mills, Nashville, Tenn.	Hackney, Broyles & Lack- ey, Knoxville, Tenn. ...	Wynn	Guaranteed.. Found.....	15.00 16.06	4.00 3.63	9.00 8.57	60.00 51.46
52	Pure Wheat Bran...	Nashville Roller Mills, Nashville, Tenn.	Hermitage Mill & Feed Co., Nashville, Tenn.	White	Guaranteed.. Found.....	15.00 16.06	4.00 4.46	9.00 6.72	60.00 56.20
4	Feed	Newbern Flour Mills, Newbern, Tenn.	Banks & Powell, Newbern, Tenn.	Barbee	Guaranteed.. Found.....	15.47 13.95	3.79 2.87	7.27 7.67	58.86 61.08
5	Imperial Feed	Newport Mill Co., Loudon, Tenn.	Hackney, Broyles & Lack- ey, Knoxville, Tenn. ...	Wynn	Guaranteed.. Found.....	13.00 13.69	4.00 5.14	8.00 8.71	60.18 58.57
58	Bran and Shorts...	Newport Mill Co., Newport, Tenn.	Newport Mill Co., Newport, Tenn.	Wynn	Guaranteed.. Found.....	14.50 16.87	4.00 4.86	8.00 7.11	60.00 55.18
57	Mixed Feed	Newport Mill Co., Newport, Tenn.	Taylor Groc. Co., Newport, Tenn.	Wynn	Guaranteed.. Found.....	13.50 14.39	4.00 5.05	8.00 6.72	63.00 58.04

Inspector's Number	NAME OF FEEDSTUFF	NAME OF MANUFACTURER	MERCHANT OR AGENT SELLING SAME	Sample Drawn by Inspector	ANALYSIS	Protein Per Cent	Fat Per Cent	Fiber Per Cent	Carb- hy- drates Per Cent
56	Dixie Feed	Newport Produce Co., Newport, Tenn.	Newport Produce Co., Newport, Tenn.	Wynn	Guaranteed.. Found.....	7.72 8.95	3.65 3.61	4.91 5.47	70.40 69.12
32	Fox Bran	Obion Mill & Elev. Co., Obion, Tenn.	Obion Mill & Elev. Co., Obion, Tenn.	Barbee	Guaranteed.. Found.....	13.72 15.09	4.09 4.37	6.68 7.25	58.10 57.52
60	Oak Grove Mill Feed	F. M. Smith, Oak Grove, Tenn.	J. L. Smith, Jefferson City, Tenn....	Wynn	Guaranteed.. Found.....	14.50 17.11	4.00 4.70	8.00 7.58	65.00 54.17
43	Valley Poultry Feed.	G. E. Patterson & Co., Memphis, Tenn.	John H. Johnson & Son, Jackson, Tenn.	Barbee	Guaranteed.. Found.....	10.00 10.53	3.50 3.75	4.00 2.73	65.09 68.01
37	Cotton Seed Meal..	Phoenix Cotton Oil Co., Covington, Tenn.	Jacket & Anderson, Covington, Tenn.	Barbee	Guaranteed.. Found.....	39.00 36.33	7.00 9.14	12.00 9.80	25.00 27.92
30	Chicken Chowder ..	Purina Mills, St. Louis, Mo.	R. C. Halloway, Obion, Tenn.	Barbee	Guaranteed.. Found.....	16.00 17.64	2.50 3.00	11.50 9.26	56.00 52.38
69	Alfa Ration Stock Feed	G. E. Patterson & Co., Memphis, Tenn.	C. R. Baird & Co., Chattanooga, Tenn.	Wynn	Guaranteed.. Found.....	10.00 12.61	3.50 3.49	11.40 9.61	62.00 56.35
24	Richland Dairy Feed	Pulaski Grain & Mfg. Co., Pulaski, Tenn.	Pulaski Grain & Mfg. Co., Pulaski, Tenn.	White	Guaranteed.. Found.....	14.00 15.01	4.00 5.10	8.68 6.45	55.00 60.51

25	Wheat Offal	Pulaski Grain & Mlg. Co., Pulaski, Tenn.	Pulaski Grain & Mlg. Co., Pulaski, Tenn.	White	Guaranteed... Found.....	15.00 16.67	4.00 3.66	8.00 7.36	55.00 60.25
23	Oswegan Feed	Peters & Bradley Mlg. Co., Knoxville, Tenn.	Peters & Bradley Mlg. Co., Knoxville, Tenn.	Wynn	Guaranteed... Found.....	14.00 16.76	4.00 4.81	6.50 6.67	60.00 57.11
28	Dry Mash	Polk & Ballard Co., Boston, Mass.	Raines, Connel & McFad- den, Memphis, Tenn.	Barbee	Guaranteed... Found.....	20.00 20.09	3.00 3.09	10.00 5.89	..... 48.85
24	Kolt Eat Dairy Feed	G. E. Patterson & Co., Memphis, Tenn.	W. D. Moon & Son, Memphis, Tenn.	Barbee	Guaranteed... Found.....	15.00 11.75	3.50 1.83	12.00 19.63	59.00 42.19
41	Banner Feed	Quaker Oats Co., Chicago, Ill.	W. J. Barton Feed Co., Johnson City, Tenn.	Wynn	Guaranteed... Found.....	10.00 11.58	4.00 4.84	9.00 5.78	62.00 65.22
16	Victor Feed	Quaker Oats Co., Chicago, Ill.	Greenfield Produce Co., Greenfield, Tenn.	Barbee	Guaranteed... Found.....	9.75 11.76	3.75 2.69	10.50 6.26	63.00 62.38
4	Special Cotton Seed Meal	Rome Oil & Fer. Co., Rome, Ga.	Hackney, Broyles & Lack- ey Co., Knoxville, Tenn.	Wynn	Guaranteed... Found.....	41.00 42.38	7.00 7.07	8.00 6.58	25.00 31.16
40	Purina Molasses Feed	Raulston Purina Co., St. Louis, Mo.	W. J. Barton Feed Co., Johnson City, Tenn.	Wynn	Guaranteed... Found.....	10.00 12.16	2.50 2.10	12.00 8.11	59.00 59.76
9	Cherokee Brand Cot- ton Seed Meal....	Rome Oil & Fer. Co., Rome, Ga.	Davis & Susong Co., Knoxville, Tenn.	Wynn	Guaranteed... Found.....	38.62 41.86	6.00 7.08	10.00 7.03	22.00 31.13

Inspector's Number	NAME OF FEEDSTUFF	NAME OF MANUFACTURER	MERCHANT OR AGENT SELLING SAME	Sample Drawn by Inspector	ANALYSIS	Protein Per Cent	Fat Per Cent	Fiber Per Cent	Carbohy- drates Per Cent
34	Royal Wheat Bran.	Royal Milling Co., Dyersburg, Tenn.	Will Foshee & Co., Dyersburg, Tenn.	Barbee	Guaranteed.. Found.....	14.50 16.23	3.75 4.20	9.00 8.92	55.00 54.67
52	Wheat Bran	J. S. Reed, Morristown, Tenn.	J. S. Reed, Morristown, Tenn.	Wynn	Guaranteed.. Found.....	14.50 16.76	4.00 4.47	9.50 9.29	55.00 51.76
51	Wheat Shorts	J. S. Reed, Morristown, Tenn.	J. S. Reed, Morristown, Tenn.	Wynn	Guaranteed.. Found.....	15.00 17.72	4.50 5.30	7.00 4.44	50.00 56.62
27	Rialto	Raines, Connel & McFad- den, Memphis, Tenn.	Raines, Connel & McFad- den, Memphis, Tenn.	Barbee	Guaranteed.. Found.....	12.34 14.92	3.74 3.31	9.50 5.62	57.80 56.26
13	Bran and Shorts ...	Sparta Milling Co., Sparta, Tenn.	Sparta Milling Co., Sparta, Tenn.	White	Guaranteed .. Found.....	11.06 17.29	5.01 4.07	6.69 7.30	60.00 56.94
10	Scott's Dairy Feed..	Scott Milling Co., Knoxville, Tenn.	Scott Milling Co., Knoxville, Tenn.	Wynn	Guaranteed.. Found.....	14.00 14.39	4.00 6.38	9.00 6.37	50.00 59.22
6	Josco Feed	J. Allen Smith & Co., Knoxville, Tenn.	G. W. Robinson, Knoxville, Tenn.	Wynn	Guaranteed.. Found.....	14.50 15.45	4.00 3.96	8.00 5.83	56.00 60.37
51	Standard Feed	Standard Feed Mills, St. Louis, Mo.	Hermitage Mill & Feed Co., Nashville, Tenn.	White	Guaranteed.. Found.....	11.50 10.31	3.50 2.14	10.00 9.89	57.00 56.30

66	Sugarine Dairy Feed	Sugarine Co., Owensboro, Ky.	Shelton Grain & Feed Co., Chattanooga, Tenn.	Wynn	Guaranteed.. Found.	16.50 19.04	3.50 5.77	12.00 11.33	46.00 44.18
67	Sugarine Alfalfa Horse Feed	Sugarine Co., Owensboro, Ky.	Shelton Grain & Feed Co., Chattanooga, Tenn. ...	Wynn	Guaranteed.. Found.	11.00 13.43	2.50 3.62	12.00 10.87	50.00 56.06
72	Standard Feed	Standard Feed Co., Atlanta, Ga.	Stegall Feed Co., Chattanooga, Tenn.	Wynn	Guaranteed.. Found.	11.00 10.35	3.50 2.73	10.00 8.19	57.00 65.69
26	Sugarine Feed	Sugarine Co., Chicago, Ill.	W. D. Moon & Son, Memphis, Tenn.	Barbee	Guaranteed.. Found.	16.50 17.99	3.50 3.24	12.00 4.03	46.00 50.71
33	Mixed Feed	Sparger Mill Co., Bristol, Va.-Tenn.	W. T. Arnold, Bristol, Va.-Tenn.	Wynn	Guaranteed.. Found.	14.92 15.01	4.54 4.93	5.70 7.26	60.00 58.47
47	Bran	A. Stafford & Co., Martin, Tenn.	Bell Bros., Martin, Tenn.	Barbee	Guaranteed.. Found.	15.56 15.53	4.73 4.58	7.78 9.45	67.69 54.25
45	Alfalfa Meal	W. H. Small & Co., Evansville, Tenn.	Gray & Hutcherson, Martin, Tenn.	Barbee	Guaranteed.. Found.	20.60 14.65	2.95 5.40	..... 36.83	32.00 26.24
50	Mill Feed	E. F. Spears & Co., Paris, Ky.	J. H. Longmire, LaFollette, Tenn.	Wynn	Guaranteed.. Found.	15.29 14.74	4.00 4.45	7.50 7.22	57.18 57.20
63	Shelton Mill Bran...	Shelton Mills, Chattanooga, Tenn.	F. A. Hood & Co., Chattanooga, Tenn.	Wynn	Guaranteed.. Found.	16.50 16.67	4.50 3.81	8.50 5.45	57.03 58.16

Inspector's Number	NAME OF FEEDSTUFF	NAME OF MANUFACTURER	MERCHANT OR AGENT SELLING SAME	Sample Drawn by Inspector	ANALYSIS	Protein Per Cent	Fat Per Cent	Fiber Per Cent	Carbohy- drates Per Cent
41	Neutro Hen Feed...	Corno Mill Co., St. Louis, Mo.	R. H. Worke & Co., Nashville, Tenn.	White	Guaranteed.. Found.....	10.00 10.71	3.50 2.38	5.00 2.08	68.00 69.10
13	Prime Cotton Seed Meal	Tennessee Cotton Oil Co., Jackson, Tenn.	Cherry Moss Groc. Co., Union City, Tenn.	Parbee	Guaranteed.. Found.....	38.61 41.59	8.00 8.92	11.50 5.44	25.00 27.85
32	Mixed Feed	Twin City Mills, Bristol, Tenn.	W. T. Arnold, Bristol, Tenn.	Wynn	Guaranteed.. Found.....	14.56 15.09	4.46 3.95	6.25 6.13	60.00 60.29
6	Tennessee Dairy Feed	Union City Grain & Feed Co., Union City, Tenn..	Laden & Sons, Dyer, Tenn.	Barbee	Guaranteed.. Found.....	10.00 18.25	3.50 4.09	12.00 7.47	50.00 52.92
80	Wheat Shorts	Universal Milling Co., Lebanon, Tenn.	Universal Milling Co., Lebanon, Tenn.	White	Guaranteed.. Found.....	15.00 16.85	4.74 3.13	4.72 2.35	59.33 61.24
79	Wheat and Corn Bran	Universal Milling Co., Lebanon, Tenn.	Universal Milling Co., Lebanon, Tenn.	White	Guaranteed.. Found.....	12.90 13.78	4.82 6.63	8.10 5.85	50.00 56.76
12	Tennessee Dairy Feed	Union City Grain & Feed Co., Union City, Tenn..	_____, Huntingdon, Tenn.	Barbee	Guaranteed.. Found.....	10.00 15.71	3.50 4.15	12.00 15.44	50.00 46.04
44	Second Grade Cot- ton Seed Meal ...	Tennessee Fertilizer Co., Memphis, Tenn.	R. H. Worke & Co., Nashville, Tenn.	White	Guaranteed.. Found.....	20.00 21.50	5.00 4.86	22.00 22.64	38.00 36.50

43	Prime Cotton Seed Meal	Tennessee Cotton Oil Co., Nashville, Tenn.	R. H. Worke & Co., Nashville, Tenn.	White	Guaranteed.. Found.....	41.00 39.49	9.00 11.60	10.00 4.41	30.00 30.03
11	Corno Hen Feed ...	The Corno Mills, St. Louis, Mo.	Carter & Fowier, Huntingdon, Tenn.	Barbee	Guaranteed.. Found.....	10.00 10.62	3.50 4.27	5.00 1.82	68.00 72.98
22	Cremo Bran Feed Meal	Tennessee Fiber Co., Memphis, Tenn.	Neil & Cash Co., Knoxville, Tenn.	Wynn	Guaranteed.. Found.....	20.00 25.10	5.00 4.82	22.00 22.20	38.00 34.64
15	Bran	Troy Roller Mills, Troy, Tenn.	Hardy & Glass, Union City, Tenn.	Barbee	Guaranteed.. Found.....	11.00 16.23	4.05 4.04	7.50 4.81	55.12 56.14
8	Acme Feed	Valley Milling Co., St. Louis, Mo.	Davis & Susong Co., Knoxville, Tenn.	Wynn	Guaranteed.. Found.....	10.00 10.44	3.00 3.45	10.00 1.64	70.00 72.95
40	DeSoto Feed	Valley Milling Co., St. Louis, Mo.	Walker & Teague, Jackson, Tenn.	Barbee	Guaranteed.. Found.....	10.00 10.27	3.00 3.71	10.00 2.95	70.00 69.38
42	Acme Feed	Valley Milling Co., St. Louis, Mo.	Felsenphal & Tawn, Jackson, Tenn.	Barbee	Guaranteed.. Found.....	10.00 10.71	3.00 3.17	10.00 3.48	70.00 67.06
4	Wheat Shorts	Winchester Milling Co., Winchester, Tenn.	M. L. Grant, Winchester, Tenn.	White	Guaranteed.. Found.....	15.00 17.11	4.00 4.57	6.00 5.23	..... 60.59
29	Bran and Shorts ...	W. H. Williard, Maryville, Tenn.	W. H. Williard, Maryville, Tenn.	Wynn	Guaranteed.. Found.....	14.50 14.04	4.30 4.39	8.00 7.49	55.00 39.40

Inspector's Number	NAME OF FEEDSTUFF	NAME OF MANUFACTURER	MERCHANT OR AGENT SELLING SAME	Sample Drawn by Inspector	ANALYSIS	Protein Per Cent	Fat Per Cent	Fiber Per Cent	Carbhy- drates Per Cent
64	Acme Feed	Valley Milling Co., St. Louis, Mo.	F. A. Hood, Chattanooga, Tenn.	Wynn	Guaranteed.. Found.	9.00 10.09	3.00 1.93	10.00 1.37	50.00 70.57
18	Dixie Chick Feed ..	Webb & Maury, Memphis, Tenn.	Tucker Mosby Seed Co., Memphis, Tenn.	Barbee	Guaranteed.. Found.	10.00 10.71	3.50 2.82	3.50 2.43	50.00 67.61
62	Blue Ribbon Chick- en Feed	Dan C. Wheeler & Co., Chattanooga, Tenn.	Dan C. Wheeler & Co., Chattanooga, Tenn.	Wynn	Guaranteed.. Found.	10.00 10.88	2.65 3.87	1.70 2.37	71.39 69.14
48	Crushed Ear Corn..	Walker Milling & Produce Co., Sevierville, Tenn..	Walker Milling & Produce Co., Sevierville, Tenn..	Wynn	Guaranteed.. Found.	8.50 9.04	3.50 3.55	6.50 5.16	62.20 66.84
47	Bran and Shorts....	Walker Milling & Produce Co., Sevierville, Tenn..	Walker Milling & Produce Co., Sevierville, Tenn..	Wynn	Guaranteed.. Found.	14.41 17.55	4.40 4.03	7.23 5.02	50.00 57.70
38	Snow Flake Feed...	Watauga Flour Mills, Elizabethton, Tenn. ...	Watauga Flour Mills, Elizabethton, Tenn. ...	Wynn	Guaranteed.. Found.	15.40 17.99	4.00 4.25	9.00 4.66	55.00 58.34

RULES AND REGULATIONS.

Following are the rules and regulations governing the sale of concentrated commercial feeding stuffs in Tennessee, as provided in Chapter 434 of the Acts of 1909:

1. Concentrated commercial feeding stuffs shall include all feeds used for live stock and poultry except whole hays, straws and corn stover when the same are not mixed with other materials, nor shall it apply to the unmixed whole seeds of grains of cereals when not mixed with other materials.

2. That every lot or parcel of concentrated commercial feeding stuff sold, offered or exposed for sale within this State have affixed thereto, or printed thereon in a conspicuous place on the outside thereof, a legible and plainly written statement, in the English language, clearly and truly certifying the weight of the package (provided that all concentrated commercial feeding stuffs shall be in standard-weight bags or packages of 5, 8 1-3, 10, 25, 50, 75, 100, 125, 150, 175 or 200 pounds); the name, brand, or trademark under which the article is sold; the name and address of the manufacturer, jobber or importer; the name of each and all ingredients of which the article is composed; a statement of the maximum percentage it contains of crude fiber, and the percentage of crude fat, and the percentage of crude protein, and the percentage of carbohydrates, allowing 1 per cent of nitrogen to equal 6 1-4 per cent of protein; all four constituents to be determined by the methods in use at the time by the Association of Official Agricultural Chemists of the United States.

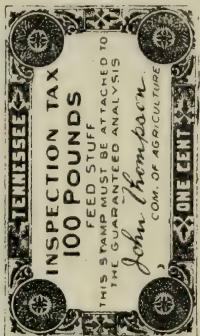
3. That each and every manufacturer, importer, jobber, agent or seller, before selling, offering or exposing for sale in this State any concentrated commercial feeding stuff, shall, for each and every feeding stuff bearing a distinguishing name or trademark, file for registration with the Commissioner of Agriculture a copy of the statement required in Section 1 of the Act, and accompany said statement, on request, by a sealed glass jar or bottle containing at least one pound of such feeding stuff to be sold, exposed or offered for sale, which sample shall correspond within reasonable limits to the feeding stuff which it represents in the percentages of crude protein, crude fat, crude fiber and carbohydrates which it contains.

4. That whenever a manufacturer, importer or jobber of any concentrated commercial feeding stuffs shall have filed a statement, as required by Rule 3, no agent or seller of such manufacturer, importer or jobber shall be required to file such statement.

5. Four guarantees are required on the registration sheet, viz: the minimum percentage of crude fat, crude protein and the percentage of carbohydrates, the maximum percentage of crude fiber which must be stated separately. In other words, the crude fat and crude protein and carbohydrates in a manufacturer's goods must not be less than his guarantee and the fiber must not be above his guarantee.

6. It is optional with the manufacturers or sellers whether the sack be branded, although that is desired always, but the required items must always be printed on the tag. The tax stamp must be affixed to the tag preferably

alongside the printed matter, but in case of necessity may be attached to the back of the tag. Below is a sample tag.

	<p>100 POUNDS</p> <h2>Cotton-Seed Meal Feed</h2> <p>MANUFACTURED BY (OR FOR) JAMES SMITH & COMPANY NASHVILLE, TENN.</p> <hr/> <p>GUARANTEED ANALYSIS</p> <table> <thead> <tr> <th></th> <th>Per cent</th> </tr> </thead> <tbody> <tr> <td>Protein.....</td> <td>38.62</td> </tr> <tr> <td>Fat.....</td> <td>10.50</td> </tr> <tr> <td>Fibre.....</td> <td>7.50</td> </tr> <tr> <td>Carbohydrates.....</td> <td>40.00</td> </tr> </tbody> </table> <hr/> <p>INGREDIENTS—Cotton-Seed Meal, Cotton-Seed Hulls and Wheat Bran.</p>		Per cent	Protein.....	38.62	Fat.....	10.50	Fibre.....	7.50	Carbohydrates.....	40.00
		Per cent									
Protein.....	38.62										
Fat.....	10.50										
Fibre.....	7.50										
Carbohydrates.....	40.00										

7. Feeds may be shipped in bulk, or bags, from a foreign manufacturer direct to a manufacturer residing in this State, who expects to subsequently sack and tag the same or use in compounding other feeds, but in either case the shipper, in consideration of this permission, must notify the Commissioner of Agriculture, on blanks furnished by this department at the time of shipment, of the name of consignee, and the tonnage shipped, otherwise the whole shipment will be subject to seizure as being untagged and unstamped; but importers, manufacturers and manipulators shall attach to such feeding stuff a tag, stating that it is to be used for mixing purposes only, and this tag shall give the number of pounds in bulk or package, the name of the manufacturer, the name of the stuff, and its analysis, showing crude protein, crude fat, crude fiber and carbohydrates, and a duplicate of said tag shall be sent to the Commissioner of Agriculture, together with a request for inspection.

8. The principal adulterants employed in the feed stuff trade are oat hulls, barley hulls, rice chaff, corncobs, screenings, corn brand and cotton seed hulls. Some of the above may be found legitimately in a feed consequent to the grinding of the whole seed, but when used out of proper proportion, or in excess of the amount obtained in grinding the whole seed, or when foreign to the product, or if injurious to the health of domestic animals, is prohibited.

9. Mixtures.—Mixtures of wheat bran and corn bran cannot be registered as Bran; but must be registered as Mixed Bran, Mixed Feed, or some name not misleading as to the materials used in their manufacture, and the ingredients given as wheat and corn bran.

10. Feeds Containing Screenings.—Feeds containing screenings cannot be registered as Wheat Bran, Wheat Middlings, Bran Middlings, etc., but must be registered as Wheat Bran and Screenings, Bran and Screenings, Mixed Feed, or some name not indicating definite by-products and the ingredients given as wheat bran and wheat screenings, clover screenings, or whatever the material may be. In all feeds containing screenings, the source

of the screenings, i. e., wheat screenings, oat screenings, clover screenings, etc., will be required. The general term grain screenings will not be accepted.

11. Naming Ingredients.—The ingredients of a feed containing corn bran, screenings, sweepings and such materials cannot be covered by the term Wheat Product, but must have each material used given as a separate ingredient. The term wheat product, corn product, etc., should not be used in the certificates to guarantee ingredients, but the common names of the materials in the feed, i. e., wheat bran, wheat middlings, corn bran, etc., should be given.

12. Shipstuff.—The registration of a feed under the name of Shipstuff is restricted to those composed of mixtures of wheat bran and shorts, wheat bran and middlings, middlings and shorts, or a mixture of the three. Shipstuff can only be used to cover feeds composed of wheat product.

13. Corn Cockle.—Corn Cockle, ordinarily termed cockle, having been found poisonous when fed to cattle and poultry, will be considered an adulteration if present in appreciable amounts in a feeding stuff offered for sale in this State.

14. Seeds.—This term will not be accepted as an ingredient of a feeding stuff to cover a mixture of seeds. Where seeds are used, the common name of each variety of seed used must be given on the certificate.

15. Grit.—This term used as an ingredient of a feeding stuff will be understood to mean the rough, hard particles of limestone, quartz, mica, gravel, etc., used in poultry foods. It should be preceded on the certificate by the name of the material used, i. e., limestone grit, quartz grit, mica grit, etc.

16. All cotton seed meal containing less than 38.62 per cent crude protein shall be sold as "second-class cotton seed meal." If second class meal contains hulls or lint it shall be plainly stated on the analysis tag.

17. Crushed or ground ear corn can be sold under the Act, but must not be mixed or compounded with any other substance.

18. All cracked corn sold, offered or exposed for sale in this State, made from damaged corn, shall be plainly branded "Damaged Cracked Corn," or "Cracked Corn Made from Damaged Corn."

19. Any cereal containing 5 per cent or more of seeds other than as represented must pay the inspection tax and in every other way comply with the Act governing the sale of feed stuffs in Tennessee.

20. If any substance, such as chaff, screenings, damaged, faulty or unlike seeds or grains or foreign materials be mixed with or added to seeds or grain as an adulterant and not plainly marked on the package containing it, or in which it is offered for sale, showing the true composition of the mixture, will be considered a violation of the law; e. g., if oats be mixed with screenings and shrunken seeds, or barley, the proper method of branding would be "oats and screenings," "oats and barley."

21. No feed shall be registered or allowed on sale in this State under a name that is misleading to its quality.

22. The Commissioner of Agriculture shall have the power to refuse to allow any manufacturer, importer, jobber, broker, agent or dealer, or any person or persons, to lower the registration or guaranteed analysis of his or their product or products during the calendar year, unless satisfactory reasons are presented for making the change or changes.

23. No feed stuff stamps will be sold or furnished any dealer unless said dealer is, according to law, registered for the calendar year in which the order is made.

All orders for more than 500 feed stamps of any denomination will be sent by express, unless stamps to pay for mailing are enclosed.

All feed stamps sent by mail or otherwise are at the risk of the purchaser.

Tax stamps for feed are net cash. Do not include the amount for postage in your check that you send to pay for the tax stamps—send the postage stamps for mailing.

Tax stamps of suitable denominations, blanks for registration, and requests for inspection will be furnished on application. Make all checks payable to

T. F. PECK,

Commissioner of Agriculture.

DEFINITIONS.

Pure Wheat Bran.—Shall consist of the coarse outer skin of the wheat berry separated from the finer offal, and shall not be considered pure when mixed with shorts or middlings.

Brown Middlings.—Shall consist of the fine particles of the outer bran as well as the inner or "bee-wing" bran when separated from the wheat bran and wheat middlings.

"White Middlings."—Shall consist of that part of the offal from wheat left after separating from it the bran and the brown middlings.

"Shipstuff."—Shall be composed of the brown middlings and the white middlings of wheat when run together.

"Wheat Offal."—Shall be composed of the bran, the brown middlings and the white middlings of wheat when run together.

SYNOPSIS OF THE LAW.

1. The law requires that all commercial feeding stuffs, sold or offered for sale in the State of Tennessee, shall be registered with the Commissioner of Agriculture.

2. The following must be registered: Number of pounds in the package, the name of the feed, name of each ingredient of which the feed is composed, the guaranteed analysis—giving percentage of protein, fat, fiber and carbohydrates, and the name of the manufacturer.

3. Where standards are established the feeds must meet these standards.

4. Where no standard is established, the manufacturer may make his own guarantee, but is required to live up to his guarantee.

5. All commercial feeding stuff must have the requisite number of stamps attached, except when used for mixing purposes only.

6. No feed can be adulterated with substances of little or no feeding value, such as corncobs, peanut shells, oat hulls and chaff and rice hulls.

OBJECTS OF THE LAW.

1. To have all feeds offered or exposed for sale or sold in the State labeled so that the consumer may know their composition and the materials used in their manufacture.

2. To protect the consumer against adulterated or inferior feeds which up to the time of the passage of the law he had no means of determining.

3. To protect the honest manufacturer and dealer against dishonest competition.

4. To inform the consumer as to feeds which were the most economical to purchase, and to promote the rational use of feeding stuffs.

WHAT HAS BEEN ACCOMPLISHED.

1. It has placed the feeding stuff trade on an honest basis, and mixtures of wheat, bran, middlings and other products with corn bran, screenings, sweepings and such materials are now sold to the consumer for what they really are, and not as Pure Wheat Bran, Middlings, etc.

2. It has prevented the makers of adulterated feeds from offering them as pure products, and has practically eliminated the use of corncobs, oat hulls, peanut hulls and like materials as adulterants.

3. It has decreased the sale of a number of inferior feeds composed largely of worthless materials.

4. It has increased the demand for Tennessee by-products.

5. It has led consumers to investigate the different feeds, and has thus increased the sale of standard feeds of known value.

6. It has reduced the sale of a miscellaneous collection of compounded feeds.

7. Consumers are becoming educated to the desirability of investigating the feeding stuffs offered for sale and purchasing those which contain the feeding ingredients needed in the most desirable form and at the best price per unit rather than at the price per ton. In other words, they are beginning to purchase feeding stuffs on the basis of obtaining the feeding ingredients desired from the best sources which are generally if not always the most economical.

8. It has reduced the sale of a mass of condimental feeds for which extravagant claims were made and exorbitant prices asked.

9. In a number of cases where the inspection analysis has shown a feed of inferior quality, due to poor processes of milling, the manufacturer has taken steps to adopt more up-to-date methods, which will materially benefit both his customers and himself.

10. It has equalized and promoted uniformity in the selling price of feed.

11. By increasing the sale of standard feeds of high character, it has redounded to the benefit of the honest manufacturer and dealer.

12. It has prevented Tennessee from being the dumping grounds for feeds of inferior quality, which could not be sold in States having Feed Stuff Laws.

13. The good results obtained from the enforcement of the law continue and we believe the facts justify the assertion that serious adulteration of feeding stuffs has disappeared from Tennessee; that the feeding stuffs offered for sale are properly labelled and sold on their merits, and that the consumer being thus in position to inform himself as to the materials from which any feeding stuff is compounded is amply protected from adulteration and misrepresentation.

DESCRIPTION OF PRODUCTS.

The term commercial feeding stuff is applied to substances which are usually by-products of other industries. In the manufacture of flour, for example, certain by-products, as bran, shorts and middlings, are used for stock feeds. Cotton seed meal is a by-product in the manufacture of cotton seed oil.

FROM WHEAT.

Bran.—This is the coarse outer part or skin of the kernel to which more or less starchy material is attached. It is a valuable feed because of its protein and fat content, though somewhat high in indigestible fiber. It is rich in mineral matter and, therefore, a good bone-making food. Bran is something of an aid to digestion and is a mild laxative.

Shorts and Middlings.—This is a part of the wheat kernel between the starchy portion and outer coatings. It contains less fiber and mineral matter than bran, and its protein content differs only slightly from that of bran.

Wheat Germ.—This consists of the embryo of the wheat grain. It is rich in protein and fat.

FROM CORN.

Corn Bran.—This is the outer husks or coating of the corn grain. It is high in crude fiber, containing practically all the fiber from the grain. It is low in feeding value.

Gluten Meal.—This is the more nitrogenous portion of the corn grain which lies below the husk. It does not contain either the hull or germ, and is very rich in fat and protein.

Germ Meal or Cake is the nitrogenous material left after pressing out the oil. It is rich in fat and protein.

Corn cobs consist largely of crude fiber, and are very low in feeding value. Before ripening the cob is more nutritious, as it is not so hard and woody. Cobs, when ground with the grain belonging to it, are not objectionable, but rather improves the feed for cattle and horses.

FROM RICE.

Rice Meal or Bran consists of the outside of the rice grain and more or less of the grain. It is rich in protein and fat and high in percentage of ash or mineral matter.

Rice Polish is a fine dust-like powder and is rich in nutritive elements. Rice polish is the dust derived from polishing the grain.

FROM OATS.

Oats are employed whole or crushed as a feeding stuff. In the preparation of oatmeal for human food, the oat hull or husk is the principal by-

product, which is practically worthless, being mainly woody fiber. Oat hulls, being produced in large quantities at the oatmeal mills, are used by unscrupulous feed dealers for mixing with cornmeal and other feeding stuff, the mixture being represented to the prospective purchaser as containing ground oats, in evidence of which are numerous hulls. In purchasing ground feeds, where an admixture of oats is claimed, it is always well to remember this possible source of fraud and inspect the feed to ascertain if the oat kernels are present in proper proportion with the hulls.

FROM BARLEY.

Malt Sprouts.—Malt is produced from barley by allowing it to germinate, these tiny sprouts are broken off and separated from the grain by sieving. They accumulate in large quantities. They are rich in protein and mineral matter.

Dried Brewers' Grain.—In the manufacture of beer the brewers extract from the malt the soluble dextrin and sugar. Near the breweries they are employed largely as feeds. They contain too much water to be shipped, but when dried are a valuable feed, and are sold under the name of dried brewers' grains.

FROM COTTON SEEDS.

Cotton Seed Meal is the ground residue from the extraction of cotton seed oil from the cotton seed kernels. The standard grade in this State must contain 6.18 per cent nitrogen, which is equal to 38.62 per cent protein. Cotton seed meal, when of good quality, is one of the best and cheapest feeds on the market.

FROM PEANUTS.

Peanut Cake or Meal is the residue from the extraction of oil from the peanut kernel. This is a good feed. This product, as well as other concentrated feeds, is often adulterated with ground peanut shells.

MOLASSES FEEDS.

Molasses feeds consist principally of mill by-products mixed with molasses. These feeds vary a great deal in the ingredients of which they are composed, many of them being composed of nutritious ingredients and of good quality, while others contain only low grade materials the identity of which is covered up by molasses. The ingredients found in the feeds examined are as follows: Mill screenings (frequently containing considerable amount of weed seed), wheat middlings, malt sprouts, corn meal, oat hulls, cotton seed meal, dried brewers' grains, barley, barley hulls, cracked corn, dried distillers' grains, rice hulls, and a few have a small amount of salt added to them.

Molasses is a carbohydrate, and when properly mixed with materials which contain protein and fat makes a very satisfactory feed. The only danger in buying this class of goods is that some manufacturers use the molasses to cover up worthless adulterants in the feeds.

Mill screenings have been found to compose a large part of some of these feeds. This introduces into the feed a large quantity of weed seeds. Experiments at several stations have shown that in many cases weed seeds

when fed to animals are not affected by the digestive process, and hence a large amount of viable weed seeds are left in the manure. When feeds contain considerable amounts of weed seeds the purchaser is not only paying for worthless materials, but is introducing weeds on his land. Oat hulls, barley hulls and rice hulls, all of which are practically worthless as feeds, have been found in considerable quantities in some of these feeds.

The feeds sold as "Dairy Feeds" are usually from 3 to 5 per cent higher in protein than those sold as "Feeds" and "Horse and Mule Feeds." They contain some concentrated material such as cotton seed meal or oil meal, which increases the per cent of protein.

Several brands of these feeds contain a small amount of salt, ranging from $\frac{1}{2}$ to 1 per cent. This is added to make the feed more appetizing to the animal and is not objectionable when only a small amount is added and the fact plainly stated on the label.

ALFALFA FEEDS.

The rapid growth of the industry of grinding alfalfa hay into meal has recently put on the market a large number of mixed feeds in which alfalfa is the principal ingredient. Various materials are mixed with the meal to increase the percentage of fat and make them more nearly balanced feeds. The materials which have been found in the brands on the markets are as follows: Cracked corn, oats, oat hulls, cotton seed meal, linseed meal, corn meal, dried brewers' grains, wheat bran and middlings. As will be seen from the analysis, these feeds are composed of nutritious ingredients, and in only a few cases have low-grade materials been introduced into them.

MISCELLANEOUS MIXED FEEDS.

In this class are grouped feeds which are sold under the name of Mixed Feed, Mill Feed and Feed. These are usually mixtures of wheat products, wheat and corn products, and cotton seed meal.

As with other classes of mixed feeds the manufacturers are required to state on the tag the ingredients which compose them; and the purchaser should pay special attention to see that this is done.

SALT IN FEEDS.

It has been found that some manufacturers of mixed feeds now add salt, in small quantity, to the feeds. The molasses feeds and alfalfa mixed feeds are usually the ones in which salt is found. A number of samples of feeds of these two classes were examined and salt was found in several of them, the amount varying from a few tenths of 1 per cent to slightly over 1 per cent. The presence of a very small amount of salt in a mixed feed is not objectionable, but in all cases where it is added the fact should be plainly stated on the tag.

POULTRY FEEDS.

A number of brands of poultry and chick feeds were found on the markets. The ingredients of which these feeds are usually composed are cracked corn, whole oats, barley, kaffir corn, peas, wheat, buckwheat, millet, sunflower seed, and in some brands ground limestone.

The average price of these mixtures is \$2.38 per 100 pounds. Comparing this with the price of the principal ingredients, it is seen that cracked corn

can be bought for \$1.35, wheat for \$1.85, and oats for \$1.35 per 100 pounds. The consumer is, then, paying from 40 to 90 cents per 100 pounds more for the mixture than he would pay for the principal ingredients.

The chick feeds are usually composed of the same ingredients which have been partially ground.

THE LAW IN RELATION TO PRODUCERS AND CONSUMERS.

1. The law contains no provision which prevents any farmer or consumer from mixing and having ground materials of his own production in any quantity and proportion he may desire, for his own use. If after grinding such mixtures are offered or exposed for sale, they must be registered and tagged. For example: a farmer or consumer may mix corn, oats, rye, barley and buckwheat and take it to the mill and have it ground, and such feed does not have to be tagged provided the feed returned to the consumer is made from the materials he took to the mill to have ground.

2. Anyone in the State may purchase cereals separately, mix them in any proportion he desires, and have them ground for pay, for his own use, without registering and tagging. When such materials are purchased already ground and mixed, or are offered or exposed for sale after mixing and grinding, a tag and stamp as required by law must be attached to the container.

3. If a consumer takes wheat or other cereals to a mill and has it ground for pay or toll, receiving in return the by-products—such as wheat bran, middlings, etc.—from the cereals which he took to the mill, such by-products do not have to be tagged.

From the preceding it will be seen that the Feeding Stuff Law contains no provisions which interfere with the right of the consumer to have grain of his own ground as he may desire, and there is nothing in the law which should in any way cause a discontinuation of the practice in some localities of farmers and millers grinding the grain for the consumer's own use in such quantities and mixtures as he may desire. If the grinding is done for toll, and the toll is offered for sale, it must be properly registered and tagged.

If after the consumer has had his materials ground into feed he desires to offer some of it for sale, the portion so offered must be registered and tagged.

Feed dealers can aid materially in the enforcement of the law by demanding that manufacturers furnish goods which shall come up to the guarantee. Both wholesale and retail dealers, as well as consumers, should make it plain to manufacturers that they expect to receive goods of the quality indicated by the guarantees for protein, fat, fiber and carbohydrates under which the feeds are sold. Dealers should bear in mind that they are liable to prosecution under Section 7 of the Feed Stuff Law for selling goods that are below grade.

HOW THE LAW IS ADMINISTERED.

Inspectors sent out from the Commissioner of Agriculture's office are on the road throughout the year, visiting all sections of the State, taking samples of the feeds offered for sale, which samples are forwarded to the State Chemist's laboratory, where they are subjected to microscopical and

chemical analysis. In case the microscopical examination shows the presence of adulterants the manufacturer or dealer offering it for sale is at once advised to this effect, and required to withdraw the feed from sale until tags showing the correct character of the ingredients are secured. If a second violation occurs the case is reported to the prosecutor of the district.

The inspection will also include the weighing of packages of feed offered for sale, to eliminate the practice of giving short weights, which has been prevalent in some States.

The methods used in analyzing the inspection samples are those adopted by the Association of Official Agricultural Chemists.

From time to time bulletins will be published giving the results of the inspection.

Manufacturers are requested to note that we do not analyze samples for the purpose of furnishing the information necessary for making guarantees. Such analyses should be secured from a commercial chemist.

Consumers are requested to note that the only official inspections permissible under the law are of the samples taken by the inspectors appointed by the Commissioner of Agriculture.

Every purchaser of concentrated feeding stuff should avoid buying any goods that do not bear on each package an analysis tag with the guarantee required by law, and the stamp showing the payment of the inspector's fee. Goods not having the guarantee tag and stamp are irregular and fraudulent; the absence of the guarantee tag and stamp being evidence that the manufacturer or dealer has not complied with the law. Without the guarantee tag and stamp showing what the goods are guaranteed to contain, the purchaser has no recourse against the manufacturer or dealer. Such goods are sold illegally and fraudulently, and are generally of little value. All reputable manufacturers and dealers now comply strictly with the law and the regulations by placing the guarantee tag and stamp on each package.

Most of the manufacturers of and dealers in feeds sold in Tennessee have been glad to comply with the law under which the feeds are sold in the State, and I wish to acknowledge the assistance they have kindly given me in administering the law.

A NOTE OF WARNING.

The following letter is sufficient grounds for a note of warning:

"HENNING, TENN., May 9, 1912.—Dear Sir: I am sending you under separate cover a sample of some corn which I bought from a grain dealer in Memphis, and began feeding to my two horses before noticing the corn, and lost one horse and came very near losing the other, and would like to know what my recourse would be under the pure food law against a firm putting out such feed as this is, if any. Thanking you in advance for the information, I am

"Yours very truly,

"_____."

This Department, under the present feed law, has no authority over whole hays and grains, as noted in Section 2, which reads as follows: "Be it further enacted, That the term 'Concentrated commercial feeding stuffs,' shall be held to include all feeds used for live stock and poultry, except whole hays, straws and corn stover when the same are not mixed with other materials; nor shall it apply to the unmixed whole seeds or grains of cereals when not mixed with other materials."

Stock feeders who buy corn on the general market cannot be too cautious. The high water and continued rains through the spring season have caused thousands of bushels to be damaged. In many instances shipments have been known to lay at the boat landings for thirty days unprotected from rain and high water. This situation and condition was unavoidable by the shipper and transportation companies, but that is no reason why the consumer should not be protected. Not only is the live stock in danger, but the lives of the owner and his family as well, as the fungus or germ on wet and heated grain is a deadly poison.

NEW PLANS FOR IMMIGRATION WORK.

A concerted effort is being made to bring to Tennessee a large number of the thrifty German and Dutch of Iowa and Illinois, who became interested in this State during the recent tour of the exhibits sent out by Capt. T. F. Peck, of the Tennessee Department of Agriculture and the Bureau of Immigration.

On May 29 a meeting of importance was held at the offices of the Nashville Industrial Bureau, when representatives of the various railroads of the State, officials of the Industrial Bureau, and Capt. T. F. Peck, of the Bureau of Immigration, conferred with Mr. J. J. B. Johnsonius, who had just returned from a second trip into Iowa and Illinois. He reported that within a few days several representatives of the Dutch of Iowa and the Germans around Freeport, Illinois, would be in Nashville with a view of investigating conditions and opportunities in this State and make a report to their people.

In this matter the State Bureau of Immigration, the Nashville Industrial Bureau and the railroads are working together, and it is expected that as a result of their cooperation several desirable colonies will be located in this State.

FAIR DATES FOR 1912.

Following are the dates allotted for fairs to be held in this State for the year 1912, with the names of the Secretaries of the various associations:

Postoffice.	County.	Dates.	Secretary.
Alexandria	DeKalb	Sept. 5-7	Rob Roy.
Cleveland	Bradley	Oct. 15-18	B. D. Moore.
Coal Creek.....	Anderson	Aug. 28-30	W. L. Wilson.
Concord	Knox	Sept. 10-13	F. H. Borling.
Cookeville	Putnam	Aug. 29-31	A. P. Barnes.
Deer Lodge	Morgan	Sept. 24-27	M. M. Goad.
Dresden	Weakley	Oct. 9-12	W. R. McWhirter.
Dyersburg	Dyer	Sept. 10-14	W. C. Paris.
Fayetteville	Lincoln	Aug. 14-16	W. C. Moores.
Gallatin	Sumner	Aug. 22-24	W. Y. Allen.
Humboldt	Gibson	Sept. 18-21	C. W. Rooks.
Jackson	Madison	Sept. 24-28	W. F. Barry.
Kingston	Roane	Sept. 3-6	T. E. Goodwin.
LaFayette	Macon	Aug. 15-17	M. H. Allen.
Lewisburg	Marshall	Aug. 6-9	C. C. Wallace.
Memphis	Shelby	Sept. 23-28	F. D. Fuller.
Morristown	Hamblen	Sept. 25-27	R. F. Taylor.
Murfreesboro ...	Rutherford	July 30-Aug 2...	B. B. Kerr.
NASHVILLE			
(State Fair) ..	Davidson	Sept. 16-21	J. W. Russwurm.
Newport	Cocke	Sept 18-20	J. F. Stanberry.
Rhea Springs ...	Rhea	Oct 2-7	H. B. Payne.
Rome	Smith	Sept. 12-14	A. T. Williams.
Shelbyville	Bedford	Sept. 5-7	W. E. Gant.
Sweetwater	Monroe	Oct. 1-4	Jas. R. Love.
Selmer	McNairy	Oct. 15-18	W. K. Abernathy.
Tullahoma	Coffee	Aug 28-30	John W. Harton.
Winchester	Franklin	Aug. 20-23	T. B. Anderson.

The following fairs have not furnished their dates: Brownsville, Celina, Clarksville, Columbia, Paris, Pulaski and Union City.

ALL OVER THE STATE.

At Ingleside, the well-known farm of W. Gettys, in McMinn County, a great Jersey sale was held on May 8, eighty head bringing a total of over \$16,000. One seven-months-old bull sold for \$800.

The Young Men's Commercial Club of Morristown has under consideration the establishment of a large creamery in that city.

Contracts have been let by the County Court of Madison County for the application of a liquid asphalt preparation to the entire sixty miles of macadam road in that county.

TENNESSEE BOYS TO BE ENTERTAINED AT STATE FAIR.

At a meeting of the State Fair Board of Trustees in Nashville on May 29, it was decided that one hundred Tennessee boys—one from each of the ninety-six counties of the State and one additional from each of the four larger counties—will be entertained at the fair at the expense of the fair association.

While here the boys will live in tents erected at the fair grounds, and will be the guests of the State, which will bear all expenses. They will hear lectures along the lines of agriculture and stock breeding, and each boy will be expected to write an essay giving his experiences and impressions at the fair. For the best essay a prize will be awarded by the fair association.

The boys to be the guests of the fair association will be selected by a committee composed of Commissioner Peck, the County Superintendent of Education and the county Vice-President of the Farmers' Institute.

The fair management has also decided to have one day of running races, this feature of the program to be given on Saturday, the last day.

It is confidently predicted that the fair this fall will be the most successful and largely attended in the history of the association. Improvements are being made in the grounds, the track and the buildings. Several new buildings are being planned, but it is not probable that any of them will be completed in time for the 1912 fair. It is hoped to lay the cornerstone of the \$90,000 woman's building during the week of the fair, and it will be ready for 1913.

It is proposed to have an East Tennessee Day, a Middle Tennessee Day and a West Tennessee Day during the coming fair, the time for each grand division day to be decided later. In order to secure a large attendance on each day it is hoped to secure from the railroads a very low rate.

If you don't feel enthusiastic, get out and rub up against some fellow who does. Recharge your batteries, and do the hard thing first; it will stimulate your nerve.

Have an opinion and a will of your own and adhere to them steadily, being sure they are just.

SUMMARY OF MAY CROP REPORT.

**T. F. Peck, Commissioner, Bureau of Agriculture,
Nashville, Tenn., June 1, 1912.**

The unusual amount of rain which fell during April and the first part of May has gotten the farmers greatly behind with their work, and much corn yet remains to be planted. A vast amount of damage to the farmers has been done by the floods in the western part of the State.

The cotton and corn acreage is considerably less than it was for May, 1911.

The prospect for the peach and apple crop is good, and especially the peach crop in East Tennessee.

Below is given the summary for comparison of the report of this Department made for the years 1911 and 1912.

	1911.	1912
Cotton, acreage.....	98	75
Cotton, condition.....	81	61
Wheat, condition.....	82	76
Garden, condition.....	79	80
Oats, condition.....	79	84
Young Clover, condition.....	74	85
Meadow Grasses, condition.....	76	86
Corn, acreage.....	93	80
Corn, condition.....	77	70
Tobacco, acreage.....	75	79
Tobacco, condition.....	66	73
Apples, condition.....	46	69
Peaches, condition.....	29	87
Grapes, condition.....	75	85
Irish Potatoes, acreage.....	89	84
Irish Potatoes, condition.....	77	81
Tomatoes, acreage.....	86	85
Tomatoes, condition.....	77	81
Peanuts, acreage.....	74	80
Live Stock, condition.....	87	85
Alfalfa, condition.....	78	83

MAY CROP REPORT FOR 1912—T. F. PECK, Commissioner of Agriculture

DISTRICT	COUNTY	Cotton—acreage, per cent.	Cotton—condition, per cent.	Wheat—condition, per cent.	Garden—condition, per cent.	Oats—condition, per cent.	Young Clover—condition, per cent.	Meadow Grasses—condition, per cent.	Corn—acreage, per cent.	Corn—condition, per cent.	Tobacco—acreage, per cent.	Tobacco—condition, per cent.	Apples—condition, per cent.	Peaches—condition, per cent.	Grapes—condition, per cent.	Irish Potatoes—acreage, per cent.	Irish Potatoes—condition, per cent.	Tomatoes—acreage, per cent.	Tomatoes—condition, per cent.	Peanuts—acreage, per cent.	Live Stock—condition, per cent.	Alfalfa—condition, per cent.
A Alluvial Plain of the Mississippi River and Plateau Slope of West Tennessee.	Lake	60	70	80	75	75	90	80	100	70	...	...	80	80	90	90	75	80	75	...	65	85
	Obion	60	40	75	70	65	80	80	75	30	...	...	100	100	100	100	100	75	100	...	85	...
	Dyer	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Lauderdale	90	60	50	80	75	80	90	25	75	...	...	80	80	100	85	75	50	75	...	90	...
	Tipton	100	75	75	80	80	85	75	95	70	...	...	40	70	100	90	85	...	...	...	90	...
B Brown Loam Table-lands, Middle Counties of West Tennessee.	Shelby	80	60	60	60	80	80	90	80	70	...	...	100	100	100	80	70	80	80	...	85	...
	Weakley	100	75	40	70	60	85	75	90	70	90	85	65	50	90	100	85	85	80	80	90	...
	Gibson	95	75	60	80	70	85	95	80	60	...	...	50	60	50	90	75	90	80	80	90	...
	Crockett	70	50	45	65	70	85	80	50	60	...	50	70	85	100	65	65	70	75	...	95	90
	Madison	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	75	...
C Summit Region of Watershed, West Tennessee.	Haywood	90	80	80	55	55	75	85	100	65	...	...	80	65	90	100	60	100	100	...	75	80
	Hardeman	90	50	75	75	80	90	90	100	80	...	...	100	100	100	95	95	100	100	80	90	100
	Fayette	80	30	55	70	85	...	...	...	65	...	...	55	90	95	85	80	80	70	...	80	...
	Henry	95	80	85	90	85	90	90	95	85	95	75	85	65	90	100	90	100	90	90	90	...
	Carroll	100	40	50	85	85	100	75	100	45	100	75	60	65	100	100	100	100	85	100	85	...
D Valley of Tennessee River, West and Middle Tennessee.	Henderson	50	70	75	65	75	70	75	60	90	...	...	60	85	...	75	80	...	...	...	60	...
	Chester	80	65	75	70	55	65	80	85	75	...	...	75	90	90	75	65	100	50	...	85	85
	McNairy	55	...	60	25	25	...	...	35	...	...	...	70	90	...	90	...	...	...	...	75	...
	Stewart	...	...	50	65	75	...	50	35	50	65	90	85	65	100	100	75	...	...	...	80	...
	Benton	75	70	80	85	95	75	95	100	75	100	...	90	95	85	100	100	...	...	...	80	...
	Houston	...	...	90	90	80	80	80	95	80	95	80	90	75	85	100	85	100	70	90	80	90
	Humphreys	...	...	80	85	75	75	85	85	70	75	70	45	70	65	85	40	60	90	90	50	...
	Decatur	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Perry	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Hardin	65	70	100	65	95	90	95	65	25	...	...	65	100	80	90	85	...	...	90	90	85

MAY CROP REPORT FOR 1912—T. F. PECK, Commissioner of Agriculture

DISTRICT	COUNTY	Cotton—acreage, per cent.	Cotton—condition, per cent.	Wheat—condition, per cent.	Garden—condition, per cent.	Oats—condition, per cent.	Young Clover—con- dition, per cent.	Meadow Grasses— condition, per cent.	Corn—acreage, per cent.	Corn—condition, per cent.	Tobacco—acreage, per cent.	Tobacco—condition, per cent.	Apples—condition, per cent.	Peaches—condition, per cent.	Grapes—condition, per cent.	Irish Potatoes—acre- age, per cent.	Irish Potatoes—con- dition, per cent.	Tomatoes—acreage, per cent.	Tomatoes—condition, per cent.	Peanuts—acreage, per cent.	Live Stock—condi- tion, per cent.	Alfalfa—condition, per cent.
E Highland Rim of Mid- dle Tennessee, West- ern Subdivision.	Montgomery	...	...	65	70	90	90	80	50	85	45	90	85	80	95	70	60	80	75	...	85	85
	Robertson	...	...	80	85	65	85	85	35	60	25	55	75	70	80	65	65	90	90	100	100	100
	Cheatham	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Dickson	...	...	100	100	100	100	100	75	75	100	80	100	100	100	100	100	90	100	100	100	95
	Hickman	...	...	...	...	...	...	...	70	85	70	70	45	95	100	100	100	90	100	100	100	85
	Lewis	...	...	85	85	80	95	100	70	85	70	45	95	100	100	100	85	80	100	100	100	100
	Wayne	100	100	50	60	100	85	100	50	50	...	...	25	85	100	100	75	100	75	100	100	100
	Lawrence	100	...	100	50	75	90	100	90	...	...	...	100	100	60	...	75	100	100	...	100	...
	Macon	...	30	70	45	70	60	60	...	70	...	60	40	40	45	75	70	10	60	...	45	...
	Clay	...	...	65	60	50	100	75	35	75	...	...	50	60	...	85	50	...	...	...	100	...
F Highland Rim of Mid- dle Tennessee, Eastern Subdivision.	Pickett	...	...	75	95	95	90	95	30	65	...	...	50	80	...	85	50	...	...	...	...	90
	Overton	...	...	65	65	75	95	95	50	55	...	...	80	90	55	75	90	80	85	90	90	85
	Jackson	...	...	...	...	...	...	...	60	60	35	80	90	90	95	85	90	80	95	...	95	...
	Putnam	...	...	95	80	90	85	90	60	55	100	70	95	95	95	80	80	50	60	...	80	...
	DeKalb	...	...	75	80	90	85	90	40	60	...	...	35	85	80	50	...	50	60	...	80	...
	White	50	25	75	80	100	95	95	60	60	...	...	100	100	100	50	90	85	80	50	50	100
	Warren	75	...	75	90	75	50	80	75	...	...	...	100	100	100	50	90	100	45	...	90	90
	Coffee	60	...	80	60	65	80	90	80	55	100	95	80	90	75	85	85	100	45	...	95	90
	Franklin	75	...	80	60	60	75	80	100	90	...	...	20	75	65	100	80	...	...	...	75	90
	Sumner	...	...	80	75	80	95	90	90	60	95	95	90	95	80	80	75	...	...	...	90	...
G Central Basin.	Trousdale	...	...	85	80	95	95	90	75	75	50	50	85	65	80	85	25	95	100	...	95	...
	Smith	...	80	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Davidson	...	...	70	85	85	75	85	80	70	...	...	70	95	90	95	75	100	80	...	85	...
	Wilson	...	...	70	70	75	90	80	80	60	...	...	50	90	90	75	75	80	75	...	90	...
	Williamson	...	...	70	70	65	95	95	95	75	...	...	85	95	75	100	85	...	...	...	85	...
	Rutherford	75	90	65	70	70	75	70	70	70	...	...	65	75	100	80	80	...	...	...	70	...
	Jannon	...	...	80	85	100	95	90	70	70	...	...	65	100	100	90	85	100	90	...	80	85
	Maury	100	85	70	75	85	95	90	95	80	70	...	...	85	95	85	75	...	...	...	95	85
	Marshall	30	35	70	65	65	90	90	60	50	...	...	45	95	70	60	55	...	...	...	65	60
	Bledford	...	...	80	65	80	90	90	95	80	...	...	10	45	90	30	65	...	...	...	85	...
Giles	75	65	70	70	85	95	95	80	65	...	...	...	...	...	...	...	...	...	...	...	...
Lincoln	...	...	80	90	75	100	85	85	60	...	...	35	100	100	80	80	100	100	...	90	...	
Moore	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

[illegible]

NOTICE TO NEWSPAPER PUBLISHERS.

Several thousand copies of *Tennessee Agriculture* will be issued each month, but not enough, on account of limited appropriations for this work, to give it as wide circulation as desired. Therefore the Department of Agriculture asks the cooperation of the newspapers of the State in their liberal use of any or all the matter in the bulletins.

PUBLICATIONS OF DEPARTMENT OF AGRICULTURE.

The following publications have been issued by the Department of Agriculture and will be sent, until supply is exhausted, when request is accompanied by necessary postage:

Tennessee Agriculture. (Monthly Bulletin.) Vol. 1, No. 2. 48 pages. Issued June 1, 1912. 2 cents.

Facts About Tennessee. Issued December, 1911. 52 pages. 2 cents.

Map of Tennessee. Showing Agricultural and Mineral Resources, Population and Educational Statistics, with Description of Counties. Issued 1912. 2 cents.

Handbook of Agricultural Laws of Tennessee. Issued October, 1911. 68 pages. 2 cents.

Tabulated Analyses of Commercial Fertilizers. Issued January, 1912. 50 pages. 2 cents.

Seed Bulletin. No. 1. Issued March, 1912. 18 pages. 1 cent.

Proceedings Tenth Annual Session Middle Tennessee Farmers' Institute. Dec. 5-7, 1911. 160 pages. 5 cents.

Laws and Rules and Regulations Governing Live Stock Sanitary Control Work in Tennessee. Issued April, 1912. 32 pages. 2 cents.

Relation of the County Health Officer to the State Department of Agriculture. By George R. White, M.D., D.V.S. 12 pages. 1 cent.

Concentrated Commercial Feeding Stuffs. Bulletin No. 2. May 15, 1911. 96 pages. 2 cents.

Biennial Report Tennessee Department of Agriculture. 1909-1910. 392 pages. 10 cents.

Biennial Report Tennessee Department of Agriculture. 1907-1908. 250 pages. 8 cents.

Proceedings Thirteenth Annual Convention Association of Agricultural Workers of the South, at Nashville, Dec: 11-13, 1911. 58 pages. 2 cents.

Davidson County, Tennessee. Descriptive booklet. 32 pages. 2 cents.

Rhea County, Tennessee. Descriptive Booklet. 32 pages. 2 cents.

Scott County, Tennessee. Descriptive Booklet. 32 pages. 1 cent.

Warren County, Tennessee. Descriptive Booklet. 16 pages. 1 cent.

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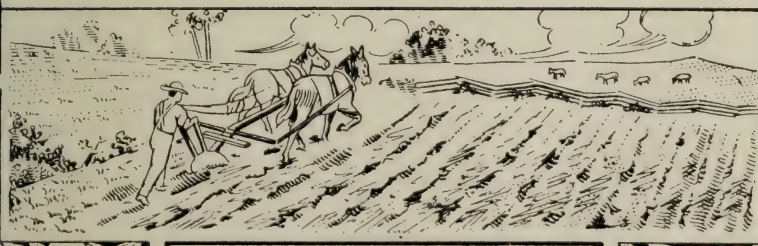
IN THIS ISSUE:

East Tennessee Farmers' Convention and Institute—
Papers and Addresses.

The Agricultural Special Train.

The House Fly as a Cause of Disease.

June Crop Report.



TENNESSEE AGRICULTURE

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Agricultural Interests of Tennessee

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THOMAS F. PECK, Commissioner

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EAST TENNESSEE FARMERS' INSTITUTE.

The meeting of the East Tennessee Farmers' Institute at Knoxville, May 21-23, was the most successful and largely attended in the history of that association. It is estimated that more than 3,000 farmers were in attendance. The program, as heretofore published, was carried out, and there were several added features of interest.

Officers for the ensuing twelve months were elected as follows: W. B. Stokley, Dandridge, President; H. M. Wilson, of McMinn County, Vice-President; Prof. H. A. Morgan, of Knoxville, Secretary; John A. Jones, of Knox County, Assistant Secretary.

Resolutions indorsing the State Fair at Nashville were passed, and also a resolution proposing that 50 per cent of the delegates to future farmers' conventions in East Tennessee be composed of young men and young women and boys and girls.

Following are the resolutions in full as adopted by the convention:

"1. We, the members of the East Tennessee Farmers' Convention and Institute, in thirty-ninth annual convention assembled, recognizing our dependence upon the Creator of all things, record our gratitude for the Divine blessings of rain and sunshine, food and strength, peace and happiness that have attended us during the past year.

"2. We hereby tender to the people of Knoxville and to the authorities of the University of Tennessee, our sincere thanks for the cordial hospitality extended us during this convention.

"We renew our expression of gratitude to the railroads for their kindness in issuing transportation to our delegates.

"3. We especially desire to thank the Southern Railway Company, Capt. T. F. Peck and Mr. T. B. Thackston for running the agricultural special train through East Tennessee last fall.

"4. One of the vital needs of our East Tennessee country is better live stock, and we feel grateful to the owners of the Lespedeza stock farm for their magnificent exhibit of beef cattle, and also to J. F. Stanberry & Sons, of Newport, for their exhibit of pure-blooded hogs.

"5. We note with pleasure the attendance of so many corn club boys at this convention, and recommend that they organize an association which shall meet as part of this convention each year.

"Realizing that the boys of today soon will be the owners and tillers of our farms, we favor every movement that will promote their education and progress.

"6. Nothing could be more positive evidence of the progress we are making as farmers than the fact that the present session of our convention through opening its doors for the reception of ladies and corn club boys as delegates. We welcome them and gladly accept their cooperation in our future sessions and are grateful to the railroads whose generosity made their attendance possible.

"7. We congratulate the farmers of East Tennessee on the acquisition of such a magnificent structure erected on the university farm and dedi-

cated to the memory of the founder of this organization, Judge Oliver Perry Temple. We regard this achievement as being beyond our greatest hopes or expectations, and we especially desire to express our sincere thanks for and appreciation of the generous donation made by Miss Mary Boyce Temple to assist in this great work. We also hereby express our thanks to those individuals, counties and to all persons who contributed so liberally and promptly to raise the debt upon our building, thereby expressing their patriotism and loyalty to the cause in which we are engaged. We realize that in the preparation of plans, in letting of contracts, and in the detail work of erecting the structure great labor was involved on the part of our building committee, and to the sub-committee, consisting of Prof. H. A. Morgan and Mr. John A. Jones, great credit due for their efficient and faithful service, and to them we extend our sincere thanks.

"8. Knowing how vital to all progress are public highways, we note with pride the recent awakening throughout East Tennessee on this subject and we pledge ourselves to support every movement whose aim is the building of good roads.

"9. We call the attention of all our people to the necessity of enlarging and extending the work of the University of Tennessee, and request them to see that every member of our next Legislature from East Tennessee votes for liberal appropriations for this purpose.

"10. The application of lime to our soil is absolutely essential to its upbuilding, and since the present freight rates are so high as to almost prohibit its use by the farmers of East Tennessee, we therefore respectfully urge the railroads of the State to immediately grant the lowest possible freight rates on ground limestone shipments, both local and interstate.

"11. We further request the railroads and express companies of Tennessee to put into effect at the earliest moment possible the lowest practicable rate on pure bred live stock of all kinds imported into the State or transported from one section to another section within the State when such live stock is to be used for breeding purposes.

"12. We request that hereafter in selecting men to fill vacancies on the Board of Trustees for the State agricultural and mechanical schools the powers which direct and control these appointments be respectfully asked to give consideration to the merits of our people as occupying positions in the industrial pursuits of life.

"13. We endorse all legislation now pending in Congress having for its object the extension of agricultural education by means of Federal aid.

"14. Believing that Congress should enact legislation looking to the betterment of country life, we desire to emphatically urge the passage of a rural parcels post bill, and we hereby instruct our Secretary to notify all of our Congressmen and Senators of our position on this measure and to request them to use their best efforts for its passage."

A resolution was also adopted recommending and endorsing T. G. Settle, of Nashville, as a member from Tennessee of the commission which it is proposed to send to Europe under the auspices of the Southern Commercial Congress to study and report on European cooperative rural finance.

**Address of T. F. Peck, Commissioner of Agriculture, East
Tennessee Farmers' Convention and Institute,
Knoxville, Tennessee, May 21, 1912.**

I am grateful for this opportunity to talk to so many of the progressive farmers of East Tennessee—to tell you something of the work of the Department of Agriculture to improve agricultural conditions in our State. No State in the Union is blessed with so many natural advantages of soil, of climate, of rainfall, of length of growing season. Other States have some special advantage, but ours combine them all.

One of our troubles has been that it has been too easy to make a living in this State—that we have not put forth the effort we should. It is true that we have a number of people like you here today, who have been awake to your opportunities and have profited by them.

But all of you know that for every man who is making good and profiting by his opportunities, there are ten others who are simply drifting with the tide, trying to farm as their fathers did, when they were working under entirely different conditions. Their soils are run down and neglected, and their equipment is antiquated. They have to buy so much their fathers made at home. They are indifferent or antagonistic to what they call book farming. The progressive farmer is making ten dollars to where they make one. He is building up his soil while theirs is being depleted each year.

The Experiment Station is working out the problems confronting the farmer, and you progressive farmers are profiting by its work. You know how to make available the results of their investigations. Not so with the backward farmer. He has already made up his mind that it is all right for the man with money, education and fertile land but not for him; so he will not read bulletins, and repels everything that he classes as book farming.

You progressive farmers have reached a point where you can walk alone. You appreciate the value of the work of the Experiment Station, and you keep in touch with their work. You attend farmers' institutions, you read good farm literature.

In planning the work of the Department of Agriculture, in addition to enforcing the agricultural laws, and cooperating in institute work, we have tried to go a step further. We want to interest and help the backward farmer. We know that a child must crawl before it can walk. We know it would be folly to try to teach a boy geometry or trigonometry until he had learned the elementary branches of mathematics. No one without special training for the work would go into a

manufacturing plant, a department store, or railroad shop and undertake to manage them. We cannot expect the backward farmer to grasp right off the work of our Experiment Station. We must arouse his interest and take him by easy stages to the point where he can see that the work is possible for him.

Now, without discounting the work of the experiment stations, we have been trying to reach the farmer and interest him in the scientific method of farming. We know that the majority of farmers read their county papers, so we have been preparing from one to two columns of simple talks to farmers each week on subjects that would interest them. The newspapers of the State have been most generous in giving these talks space, and we are more than pleased with the result. We have a correspondence list of over 500 of these farmers who have become interested, who have asked for more information. We write them and send them bulletins on the subjects, and we know that we have hundreds of farmers reading bulletins and trying to improve their methods who were formerly antagonistic to scientific agriculture.



Alfalfa on the Experiment Station Farm, Knoxville.

We want to get in close touch with the individual farmer and help him solve his individual problems. As a means of keeping in closer touch with him we are now issuing a monthly publication, which is mailed to the farmers of the State.

To create interest and help the backward farmer, we must meet him on his own ground. To do this we have been advocating the county demonstration farm. This farm should be centrally located.

should be typical of the average farms in the county, and should be equipped within reach of the average farmers of the county and should be conducted along lines possible for the average farmers to conduct their farms. Two especial objects should be sought—to increase the production and increase the fertility of the soil. When such a farm is taken in the midst of the farmers and made to produce a profit and increase in fertility without outside assistance, the surrounding farmers will take notice when they realize that nothing has been done but what they can easily do, and they will not be slow to fall in and improve their own farms. They will realize that their backwardness and indifference is costing them money, and that they might be enjoying more of the luxuries of life if they would wake up and do the things within their reach.

I want to explain briefly the several forces at work for the development of agriculture and the improvement of rural conditions in Tennessee. We have the Department of Agriculture, whose duties are administrative, to enforce the laws placed on the statute books for the protection of the farmer; to disseminate information useful to the farmer; to cooperate with the educational institutions in institute work; in conducting the operation of agricultural demonstration trains, and in the establishment of demonstration farms. We have the work of the Experiment Station for research and investigation. We have the College of Agriculture for teaching agriculture, for training men in the technical knowledge of agriculture, for agricultural extension work. This extension work is intended to carry to the individual farmer the results of the research by the experiment stations and present it to them so that they can apply it in practical farm operations, enabling them to grow better crops and at the same time increase the fertility of their soils.

All of this work is getting well organized and doing much good, but there is more for us to do. In fact, the work demanding attention and requiring development lies at the foundation of the entire proposition. That is the improvement of rural life conditions and stimulating an interest in agriculture among our boys and girls on the farm. To do this we must enlist the aid of the farmers' wives. We must help them in their efforts to make home life on the farm attractive, Our boys and girls must see something more than drudgery and isolation on the farm. We must give our farmers' wives and daughters a chance to learn more of domestic science and home economics. This move for the improvement of rural life conditions can be very much

advanced through the elementary schools of the State, but we must first raise the standard of the rural schools. This is being done.

We now have a normal school for each division of the State. The normal schools are intended to train teachers for the elementary schools. The normal schools are preparing to turn out teachers grounded in the fundamental principles of agriculture. The female teachers will have a knowledge of domestic science and home economics, and these teachers will go out into the elementary schools of the country prepared to dispel the illusions that have been kept before the boys and girls of the country, luring them to the cities.

The country boys and girls of the future will have opportunities not afforded their older brothers and sisters. They will have better roads to travel on. Instead of the one-room school-house, with a young and inexperienced teacher, they will have trained teachers in love with the country and their work and they will inspire in their students a love for the country that will result in transforming the country districts of Tennessee into prosperous sections. The College of Agriculture will be filled to overflowing with young men who want to qualify for advanced work in agriculture.

When this is accomplished, Tennessee, instead of producing \$103,000,000 annually of agricultural products, will not fall short of a billion dollars annually. There is no reason why Tennessee should not be in the front rank in agriculture, as she will be in manufacturing. We have all the natural advantages and we have the people endowed with intelligence. It is up to us to make the most of our opportunities. Will we do it? I propose to do all in my power and to contribute my full share for this result. I am sure that all of the leaders in this movement will do their parts. Much of the responsibility rests with you, my farmer brothers, in your cooperation in this movement. You can use your influence for legislation necessary to make the work most effective. You can make your farms serve as object lessons to your less progressive neighbor to stimulate him to better methods. Let's all work with the one aim of making Tennessee all that the All-Wise Creator intended, and in doing so we will not only be more prosperous ourselves, but we will contribute to the prosperity and happiness of our fellowman.

Now, if we improve agricultural conditions in Tennessee, it will not be done alone by any one of the forces I have mentioned. The Department of Agriculture cannot do it alone. Our work is limited; we have no provision for scientific research; we have no teaching force in the strict sense. We can enforce the laws and we can cooperate

with those engaged in the work of original research; we can cooperate with the College of Agriculture in their advanced work in agricultural education; we can cooperate with the normal schools, the high schools and the elementary schools in their educational work. We can disseminate information to the individual farmer; we can help him solve his individual problems.

The Experiment Station cannot go out of its province of original investigation. The College of Agriculture has a specific line of work and if properly equipped can, in addition to its regular college work, do much to make the knowledge gained of value to the individual farmer. The normal and high schools can do much in their training of teachers for the elementary schools to popularize.

Agriculture is an avocation. Too little attention has been given to this and too much to induce the boys and girls to leave the farm for careers in the cities. There has been too much caricaturing of the "hayseed" and "country bumpkin." In a nutshell, if we are going to improve the agriculture of the State, we must increase respect for the avocation of the farmer, and we are doing that very thing; the pro-



Clover Plots on the Experiment Station Farm, Knoxville.

gressive farmers of today are the shrewd business men of today. This audience before me will compare favorably with the intelligent audiences brought together for the serious consideration of any important subject. As our farmers progress, their pride in and respect for their calling grows, and others will respect our calling in proportion to the respect we have for it ourselves.

Farming, as an avocation, is entitled to the highest consideration and respect and esteem, for the industry is the foundation on which all other industries and professions rest, and on which all depend for sustenance and support. It is a well-known fact that the majority of the men who have made history in the past came from the farm, and they will continue to do so, but we want some of them who have the capacity for making history to make it in achievements in agricultural progress and development.

Conditions are most favorable now for that progress and development. Other professions and other industries realize their dependence on the farming industry for prosperity, and are inclined to help rather than hinder the farmer in his efforts. And right here, I want to call your attention to substantial interest manifested by the railroads in Tennessee in the improvement of agricultural conditions. We have three division farmers' institutes in the State with an attendance in all near ten thousand. The railroads give transportation to that vast army of farmers and farmers' wives and sons that they may improve their knowledge of agriculture.

The railroads in the State have placed at the disposal of the Department of Agriculture a magnificent train of nine cars with engine and crew, to be run from July 1 to August 23 throughout the State to stimulate interest in agriculture.

At a conference of the traffic officials in my office last month it was agreed that the railroads in the State would name a low uniform rate for the shipment of ground limestone and phosphate rock for fertilizing purposes. The railroads have been willing and ready to cooperate in any movement to improve agricultural conditions, and their liberal policy is opening the eyes of the leaders in commercial organizations to the fact that it is a wise business policy to become identified in the movement to improve agricultural conditions in the State.

With all the powerful factors friendly to our work of agricultural development and improvement of rural conditions, we certainly should be encouraged and should concentrate our energies to make the most of our splendid opportunities.

It is not want of opportunity, but with so many it is want of capacity to grasp it when it offers. We have the opportunity and I am equally sure that we have the capacity to grasp and profit by it while it is within our reach.

I have left for the last the newspapers of the State, not because I regard them least, but because I regard them indispensable in any

move for progress or development. Of all the forces I have mentioned, none of them can do their most effective work without the aid of the newspapers, and I want to tell you that the newspapers are more willing to help in a campaign for improvement in any line than any other business organization. The railroads are and have been liberal; other business interests are waking up, but the newspapers as a rule will lend their aid to a worthy cause.

I want to say, brother farmers, that we do not appreciate our home newspapers as we should; we do not support them as we should. Because they are so liberal and so generous, we take it as a matter of course. Just stop and think of the multitude of things we expect of the newspapers and then remember the insignificant little sum we have paid them.

The newspapers of Tennessee mould public opinion. Let's treat them liberally and justly, for they can be depended upon to lend their aid in disseminating useful information.

THE STATE FAIR.

Address Delivered Before the East Tennessee Farmers' Convention and Institute, Knoxville, May 21, by W. T. Roberts, of Athens, Tenn.

Mr. President, Ladies and Gentlemen: It would hardly be possible, even with the limited time, to pass unnoticed the fact of our new home; and not the least interesting fact connected with it is the several conditions that made it possible. The foundation was laid and the superstructure built by the \$1 annual dues paid by the respectable membership of this convention, and the capstone and crowning glory from our distinguished and beloved patron, Miss Temple, to honor the name of the founder and father of this honorable and useful body, Judge O. P. Temple.

Temple Hall—fitly named. Temple alone would in nowise be out of place, as a temple is a place where spirit meets and communes with spirit. And who shall say that the spirit of our distinguished dead is not here with us today?

All honor to him who was the occasion of our home being thus named. All honor to her who so nobly and fitly arranged for this monument. All honor to the tireless H. A. Morgan, who has planned and executed this work, and finally all honor to the farmers of East Tennessee who, by their willing contributions, have builded better than they knew.

We have had great days at these meetings, but this—the day that we meet and greet under our own vine and figtree—is the greatest of them all.

The State Fair was originally planned and begun as a Nashville and Davidson County institution. It was planned and arranged by a body of broad and liberal men, along broad and liberal lines, and was then thought large enough for all needs, and to one who has not been there while the fair is in progress, it looks tremendously sufficient.

From the beginning it has been self-sustaining, in so far as actual expenses and receipts were concerned, and more. But it was discovered almost at the beginning that it fell far short of the needs, as while it was but local in its aims and effects, yet, in spite of itself, it was gradually extending its scope until it was apparent that it was to be State-wide in its influence and usefulness. Then it was that the



Oliver Perry Temple Hall, New Convention Building of East Tennessee Farmers' Convention and Institute, Knoxville. (Nearing Completion.)

owners of the fair and Davidson County conceived a notable idea, and that was to turn over this magnificent plant, its equipment and good will to the State, free of debt, of a value of at least \$250,000, with successful fairs being held annually, successful as to exhibits, as to the good it was doing, and successful financially.

I wonder at it. Had it been a failure, run down at the heel, and going to pieces generally, there might have been some sinister reason suspected; but there would have been no ground even then, for the

real estate is worth every dollar that the former owners put into it. But to turn it over a success! Do you know that there could have been but one real reason for their action—patriotism?

They do not stop there, but these same owners and Davidson County are going to erect a woman's building at a cost of \$30,000 to \$40,000—it is being now provided for, and will be a fact at least by the 1913 fair. In addition, Davidson County has a magnificent building on the grounds for the exclusive use of the fair that must have cost \$50,000, all of which makes the proposition as delivered to the State of a value of about \$350,000.

The figures look large to us, but while we farmers talk in fimes, they talk in dollars, and it astonishes me to hear them talk of giving \$1,000 as glibly as we would \$1. In addition to this, they give us a practical guarantee fund of \$15,000 to finance the fair. Will you kindly remember these facts for a few minutes?

When the present management first came on the ground, unschooled in such large undertakings, the burden seemed to be mules, jacks, horses, cows, chickens, corn, cotton, etc., and how to improve them and increase yields.

We began a study first of what the fair could best do to subserve the interest of the State, and without getting away from the above-mentioned necessary things, we began to get back of the product, to the *producers* of today, and more particularly of tomorrow.

What is more splendid than a herd of Jerseys, fat, sleek and well-kept, browsing on a lush pasture, or a bunch of mules, high-headed and romping—or of Durocs, Poland Chinas or Berkshires—or a high-stepping, clean-limbed horse, or a field of clover, corn, peas, soy beans or alfalfa?

What, I say, is more splendid? I'll tell you—the young fellow that with sturdy step, clear head and eye, clean of heart and limb, with the self-confidence begotten of contact with his fellows, and the study and observation of his business, backed up by the serene confidence and aid of an helpmeet, in a bright-eyed, cultured business girl or woman, be the mother, sister, sweetheart or wife.

So the management of your fair went back of the products, as I said, and are now bending every effort to the helping of these producers. Oh, if we could regenerate our boys and girls in a day—in a year—we would think we were in paradise.

Among the many factors to this end your State Fair is the one that gives the boys and girls the best outlook into the things beyond. There everything is intensely practical and business-like. It is seeing

face to face. For instance, it cannot be estimated the good that this convention in all its years has accomplished, but this is largely theoretical. We say what may be done and how to do it, and mind you, I do not depreciate this. The fair is an exact corollary of this—it demonstrates to the eye what *has been* done by the methods taught here.

Every man, woman and child that *can*, ought to attend the fair to help and be helped, and I would say that no one who does will regret it. East Tennessee, with its wealth of superior products, should be well up to the front in exhibits, as no part of this State or of any State has more to show than we, and especially should we encourage our boys and girls to exhibit. The boys' corn clubs, the girls' tomato clubs and young people's work generally will receive more attention than ever before, and I trust that for next year every county in East Tennessee will be represented, and there should be systematic effort for this.

The necessity for enlargement is so pressing that it *must* have attention, and at once. I believe that there is not a single feature that is not in some way handicapped for room, and room we must have, or go backward. There have been crowds there, not more than half of whom could be seated. Stock is crowded to an extent that exhibitors take a risk in bringing their expensive stock for exhibition.

If we could hope that each one of you who are here today shall be henceforth active and practical friends of the fair, we could meet every need, and have a State Fair second to none; with our nearness to this ideal, we cannot afford to fail.

We, of course, cannot and do not complain at the appropriation by the last Legislature, but it is imperative that we have larger next year, and you can so engage the attention of your next Senator and Representative as to get their assistance in this. There is absolutely no antagonism between the county fairs and the State Fair. In truth, the eminent success of the State Fair will beget a fair spirit that will advance the interest of fairs now existent and build fairs where there are none.

Now, let us look to these things. Let Tennessee, at the forefront in so many things, go to the front in this.

To the State as a whole it will be but a small matter as to cost, but as to beneficent results it will be incalculable.

The bulldog hasn't much brains, but people respect him for the way he hangs on.

THE RURAL SCHOOL SITUATION.

Superintendent J. W. Brister, Nashville, at East Tennessee Farmers' Convention and Institute, May 21, 1912.

The program announces that I am to address the convention on the County Superintendent, but it is hardly to be supposed that before an audience not primarily of school people I should confine myself to a discussion that would necessarily be more or less technical. The rural school situation, in general, is so full of interest, so deserving of interest and attention, that I never forego an opportunity to direct attention to it.

But I am glad that this particular subject is announced, because it gives me a pretext for saying that the County Superintendent is the key to the rural school situation. The county that has a live, intelligent, up-to-date Superintendent is making progress educationally. Such a Superintendent is not merely drawing a salary, but he is studying the educational situation in his county and State, is keeping in touch with educators in other counties and States, is laying plans to increase educational sentiment and to develop his school system—and the county is profiting by his zeal and wisdom. But there are some County Superintendents in the State who count their duty performed when they have held an annual examination, issued certificates, made a perfunctory round of visits to their schools and laid plans for reelection. These superintendents, however, are not always to blame for this condition.

The yearly salary of County Superintendents in Tennessee, counting the State's supplement, ranges from \$150 to \$2,750, and it is not to be supposed that a first-class man can be secured who will give all his time to the duties of his office for the meagre compensation allowed in some counties. County Superintendents in general are poorly paid officials. In the possibilities for service and usefulness the office is the most important one in the county, but apparently this truth is faintly recognized. For the year ending June 30, 1911, according to reports filed in my office, the County Trustees of the State received out of the school fund approximately \$80,000, while all of the County Superintendents were paid \$56,000. Many of the County Superintendents devoted their whole time to school work, but it is not probable that the Trustees gave a very large proportion of their time to the interests of the school. If these same reports are correct the best paid school official in Tennessee is the County Trustee of Davidson County, he having received out of school funds for last year \$10,519. The Trustees of Shelby, Hamilton and Knox are next in

order, they having received from \$3,700 to \$7,800, and ten others got commissions out of school funds exceeding \$1,000. Is it any wonder that we school people feel sometimes that we are not getting a square deal and complain at the inadequate recognition of our work?

I hope you men can be induced to take a more intelligent interest in the school affairs of your county. If you have not a progressive superintendent, and your County Court does not fix the salary at a figure which will command the services of one, let me urge you to remedy this trouble and see to it that the best man that can be found shall be employed for this tremendously important work. You want a man with ideas, a man of courage, of tact, of energy and diligence, a man who can get a grasp of the school situation in the whole county and who can project a comprehensive plan of school reform which will bring your schools into the front rank. I hope the coming General Assembly will so modify our school law as to make the term of our County Superintendents at least four years. And then if we can remove every suspicion of politics from the filling of the office and attach to it a salary sufficient to command the whole time of a whole man, we shall see things doing in Tennessee educationally. Progress will be no longer sporadic or local, but steady and general.

The matter of competent supervision for our rural schools is one of vital importance. At a meeting of the State Superintendents of Public Instruction in Nashville recently, in connection with the Conference for Education in the South, it was unanimously agreed that the two most pressing needs of the rural schools at the present time is competent supervision and consolidation of weak schools with the necessary transportation of pupils. In working out a scheme of supervision we must not only have a wise County Superintendent, but in addition supervisors of agriculture and domestic science and other industrial work in our rural schools; a group of supervising experts who will give their whole time and attention in special districts to the improvement of the schools under their charge and the proper direction and supervision of the teachers doing work therein. It is gratifying to note that Knox County has already begun this work of supervision in the employment of one of the strongest school men of the county to work out the industrial features of the course of study in the various schools. A number of the Southern States have gone somewhat further than we have in Tennessee in the matter of supervisory experts, notably West Virginia and Virginia, and no movement of recent times promises more for the development of the schools than this.

A satisfactory plan of supervision also involves additional elementary school inspectors for the State. It is hoped that we can soon have one for each grand division working under the general direction of the State Superintendent and State Elementary School Inspector. The Inspector should be a member of the faculty of the State Normal School, presenting, in a brief course, the rural school situation to the pupils who attend. At the same time he should have general oversight of the schools of his grand division, cooperating with County Superintendents, assisting them and their supervisors in all their labors, projecting and participating in educational meetings and movements, and stimulating educational interest in all sections of his territory.

But I do not intend to dwell at great length on this particular phase of our educational work, because I have a more general purpose. I have endeavored since my induction into the office of State Superintendent to get the attention of the people of Tennessee and to focus it on the rural schools, especially the rural elementary schools. I would not have it thought that there is any intention of arraying the country against the city or in any way checking the magnificent progress which our city schools are making. Indeed, we are holding up to the people of the rural districts the city schools as a fair type of the educational advantages which their children ought to enjoy. And then, too, the people of the cities should be just as much concerned about the development of rural schools and rural life as the men and women who dwell in the country districts. The cities cannot live to themselves; they draw much of their best citizenship from the country; their life is conditioned on their rural environment, and anything that goes to build up country life will correspondingly advance the interests of the city. Nor is there any disposition to neglect the State normal schools or the country high schools, for it is to these institutions that we are looking for the largest assistance in the development of the rural elementary schools. It is the peculiar business of one of them to train teachers for the rural schools; it is largely the business of the other to do the same sort of work; and unless they do make this important contribution all of the plans that may be projected, all of the movements that may be inaugurated, will utterly fail. The teacher is not all of the school, as oftentimes it has been said, but the teacher is such a big part of it that it is always safe to agree that "as is the teacher so is the school."

But, gentlemen, it is this rural elementary school of Tennessee that we want to bring definitely into the consciousness of the people; it is here that we want to rivet their attention, and let it not stray there-

from until they have seen its needs, its possibilities and importance, and have resolved to give their time and thought and energy and money to its development. It is worthy the attention and interest of every loyal citizen of the State. Of all our educational agencies it is most deserving of the people's interest. I make this statement advisedly and for these reasons:

1. The rural school is an important factor in the larger problem of rural life. It is generally agreed that many of the institutions peculiar to country life are on the decline; that the country church is weakening; the glamour is being lifted from the old-time country home; rural population is declining, and there is manifest a general decay of country life. The one fact of decreasing rural population and increasing city population gives rise to alarm and calls for serious inquiry into the cause. Thirty-seven counties in Tennessee show a smaller population in 1910 than in 1900. The total increase for the whole State during the decade was only 164,173, and 70 per cent of this small increase is credited to the four counties of the State having large cities. The cry of "back to the farm" is not without significance; it grows out of the realization on the part of thoughtful men of a serious condition. Whatever other hypotheses may be advanced as to the cause of the influx of population to the cities, it is certainly true that a large number of desirable inhabitants of the country are leaving their homes in order to secure proper educational advantages for their children.

The need for improvement in the rural school is universally felt. It must play a prominent part in all the activities inaugurated for the resuscitation of country life. To it, more than to any other single institution which functions for country life, we must look for the setting in motion of forces which will make for attractiveness and productiveness, which will produce a satisfying richness and fullness of life, and which will thus aid materially in the solution of the problem confronting us.

2. The rural school has been apparently neglected. The thought of educators has been primarily about another phase of educational work. It is not meant that they have intentionally neglected the rural school; indeed they have not really neglected it. But in Tennessee and throughout the country, according to recent utterances from prominent educators, the rural school has not been held definitely in consciousness; other educational agencies have occupied first place, and the interest in the rural school has been largely incidental. It is not too much to say that the chief concern of the leading educators of Ten-

nessee for the last decade has been teacher training. It is true that the argument for teacher training agencies rested always on the needs of the rural schools—elementary schools—but the object was so great as to become almost an end in itself, and the ultimate purpose has been well-nigh obscured.

The attention and interest centered on this one point have produced results, and there is now in successful operation a creditable system of normal schools. But the mere fact of their establishment does not improve the rural school; another and a far step needs to be taken. Teachers must not only be prepared, but a place must be prepared for the teacher. The rural elementary school then must be brought into prominence, interest and attention must be focused thereon, for in the rural school lies our vital educational problem.

3. The rural elementary school has made comparatively little progress. It is universally agreed that it is the most backward of all our educational agencies. While city schools, normal schools, colleges and universities have been going forward steadily, it has been marking time. It is true that some progress has been made, that the term has been slowly lengthened, teachers' salaries have shown some advance, the revenues have increased; but it needs no argument to demonstrate that it has not kept pace with other educational forces and is today lamentably lacking in efficiency and vitality. This is true not only in Tennessee, but all over the country the same complaint is heard. The rural elementary school is not responding effectively to the demands made upon it, it is not functioning satisfactorily for rural life. The shortness of term, the poor salaries of teachers, the consequent inexperienced and untrained teaching force, the inadequate supervision, the insanitary school conditions, the small school unit, the isolation, the antiquated course of study, the general inefficiency—all are counts in the indictment which can be truthfully drawn against the rural elementary school.

It needs no argument to show that this rural school is of tremendous importance. The biggest part of our population is still in the country. If our State is to be educated it must be through this agency; if illiteracy is to be abolished, the larger share of the burden is to fall upon the rural school; if there is to be an intelligent electorate qualified to deal with the intricate problems of government and to meet the responsible duties of citizenship, there must be an efficient rural school. The greatest foe to progress, the biggest obstacle in the development of our State is ignorance; the only destruction of the foe, the only way to remove the obstacle, is in the school. It must be

resuscitated and vitalized; the future of the State, its manhood and womanhood, depend upon it.

Here then, it must be insisted, is our vital educational problem; here is the educational agency most deserving of the people's interest; here, if possible, we who happen to be in official lead today are determined to focus attention and cease not to call upon the men and women of all classes to come to our aid.

But what, some one may ask, is your program for rural school betterment? This is a pertinent question, and I take pleasure in answering it.

Let me say at the outset that in our program we have two aims: (1) A particular one, to give a rural coloring to the whole rural school process, and (2) a general one, to offer the opportunity for vocational training to those industries peculiar to rural life. And we lay it down as a general principle that the rural schools ought to function so satisfactorily and effectively for rural life that the tendency among the boys and girls educated therein should be to remain on the farm.

The general program that we have in mind involves, of course, the trained teacher. We have established county high schools and State normal schools that these may be furnished, and the time has come when Boards of Education can consistently demand professional skill on the part of their teachers and a minimum scholastic requirement of four years genuine high school work. At the same time the course of study of the normal schools and that designed for teachers in the high schools should be adapted to the training of the rural school teacher, so that it will be the natural thing for teachers educated in these institutions to find a place in the rural schools.

The program involves better buildings, modern, sanitary, comfortable, attractive, with suitable furnishings, adequate equipment, accessible playgrounds and sufficient acreage for agricultural work. And I may say in this connection that we can never have buildings of the kind desired as long as we depend upon current school revenues to supply them. The burden of permanent improvement should be distributed over a series of years; and if you men are interested in the school buildings of your county you will see to it that school bonds are issued for that purpose.

The program involves a revolution in the course of study. Time forbids going into detail, but it should be graded, revised, vitalized, related to life. The work in English should be correlated with nature study and agriculture; the text-books in arithmetic should deal largely

with the quantitative aspects of rural life; agriculture and domestic science should be in all the high schools and introduced rapidly into the grades; and all other subjects should be made to bear more directly upon rural life.

In this program of rural school development comes, too, the question of supervision, as has already been pointed out. And, further, the high school which is, I believe, the distinguishing educational movement of our times. Every Tennessean ought to be proud of the high school progress of the last six or eight years. No finer educational sentiment ever characterized a people than that which exists in the State today for them. They are doing a notable work; the very cream of the youth of the State is held in them; it is an inspiration to cross their portals and to come into close contact with the ambitious, earnest, throbbing young life.

But, gentlemen, I must take this occasion to say that we are in danger of making a grave mistake in the high school movement in Tennessee, and I find that the high school interest is waning in some counties already. In the first place, too many of our county high schools are merely poor copies of city high schools. Only a few of them have any work in agriculture, domestic science and kindred subjects; and the promises that were made to the people in their establishment have not been fulfilled. The great things which they were led to expect, the vital acquaintance with their surrounding life which it was hoped they would receive, is not being given. I know it is the same old cry of lack of funds, for it seems that in every step we take in educational work we run up against our meager revenues. But if the high school principals of Tennessee wait until they have money enough to buy farms and horses and mules and farm equipment before making some serious effort to meet the pressing obligations upon them, they will have lost their grip upon the people and the day of opportunity for the high schools will have passed. I am convinced that we have at hand, with practically no expense, the means of beginning agriculture and domestic science work in every county high school in Tennessee. I am urging high school men everywhere to organize a county high school corn club among the boys and a high school canning and poultry club among the girls, to put the clubs in charge of the most enterprising man or woman that holds a place in the high school faculty; to make intelligent use of the Government bulletins which are prepared and freely sent out; and they will thus have a first-class opportunity for introducing these vital subjects into their school work. I believe that when they show the people their intelligent interest in and compre-

hension of the demands of country life and their intention of meeting them, they will receive the people's liberal support, moral and financial. These clubs, of course, are only a beginning and will not long furnish adequate opportunity for industrial instruction. Demonstration farms are needed with every county high school and departments for domestic science and kindred subjects as thoroughly equipped as any other department of the school work. And they will come in the fullness of time. We can count on the people for them.

There is another danger in the county high school movement, and that is the multiplication of weak, indifferent second and third class high schools. We have already made this mistake with our elementary schools, as I shall presently attempt to show, and to follow the same policy with our high schools is worse than criminal. There are counties today with just enough school money to run one respectable high school in which, because of local prejudice, it has been necessary to establish two or three or four or five, and none of them can measure up to the standard which the State has set for a first-class school. You men dominate the sentiment in your county, you do the voting and pay the taxes. Can't you be induced to bring to bear upon this problem your intelligence to help the school officials to work it out satisfactorily? If we continue as we have begun, ten years from today we will have the great problem on our hands of consolidating our high schools, just as today it is absolutely necessary, if we are to make educational progress, to consolidate our elementary schools.

And then this program of school improvement involves compulsory attendance, with a longer school term, medical inspection and genuine community cooperation. The time must come when our school term will nowhere be less than six months, will gradually grow into nine, with industrial work running through the whole year; when the adults will participate in the school activities as well as the children, not merely contributing to the school their moral and financial support, but receiving from it instruction and assistance along economic, industrial and social lines.

And this program involves especially the abandonment of many of the weak, isolated, single-teacher schools and the establishment of centralized or consolidated schools at accessible and strategic points. I think if I have a hobby it is the consolidated school, and I have ridden it up and down the State for the last twelve months. During my brief incumbency of this office I have spoken in sixty or seventy counties, and rarely have I made a speech in which it did not have a place. It was Marcus Cato, I believe, who, remembering the ancient

enmity of Carthage and the danger of its existence to the Roman commonwealth, was wont to close every speech he made in the Roman Senate with the significant words: "Carthago delenda est." And I have thought that I could render no greater service to the people of Tennessee than by repeating day after day, as opportunity offered, that the rural schools must be consolidated, until the sentence, by its very repetition, burns itself into their thought and the policy is accepted and adopted in every county in the State.

There are three charges that must be made against the small-single-teacher schools. They grow out of inherent weaknesses and must ever attach to them. They are inefficient, relatively high-priced, and utterly inadequate to meet the demands which the times lay upon the schools. Mr. Frazier, our State Elementary School Inspector, and myself have recently secured statistics from nearly every County Superintendent in the State and from thirteen representative City and Town Superintendents, and from them have drawn some conclusions which we were tolerably sure of before the investigation began, but which now we can present to the people in clear, unerring figures. We find that the average monthly cost of teaching per pupil in the elementary grades of thirteen representative cities and towns in the State to be \$1.27. For the same work done in the one-teacher rural school, with from one to fifteen in attendance (and there are more than 400 in the State), it costs \$3.02. That is, it costs \$1.75 more per pupil per month in the small, one-teacher rural schools than it does the same grades in first-class schools of cities and towns. The one-teacher school with an average of 15 to 20 in attendance costs \$2.14 per month per pupil; that is, 87 cents, or 68 per cent more than in the town or city schools. Those which have an average attendance from 20 to 29 cost 63 cents more per pupil per month, and those from 25 to 30 cost 25 cents more per pupil per month. In the one-teacher rural schools there is an average of 26 recitations per day, as compared with 8 for the teacher in the town and city schools. The average time allotted to each recitation in the one-teacher school in the country is 12 minutes, while in the city schools each recitation is approximately 35 minutes. The school term in the one-teacher rural school is 99 days, against 180 days for the graded schools of the cities and towns. The teachers of the city schools, too, are much better qualified than those in the one-room country schools. In the city schools only 6 per cent of the teachers are absolutely without experience; in the country schools under consideration 22 per cent of them are raw recruits every year. Thirty-nine per cent of the city teachers

have college diplomas; only 6 per cent of the rural teachers are reported to have them. Of the city teachers 46 per cent have normal training; 8 per cent of the rural teachers have had such advantages. One hundred per cent of the city teachers have had an equivalent of four years' high school education; only 21 per cent of the teachers of the one-room schools in the country have had as much training. County Superintendents of the State spend on an average 40 days visiting their schools during the year; they visit 2.4 schools per day, remaining at each school two hours and ten minutes on the average.

Is anything further necessary to demonstrate the inefficiency and relatively high cost of the single-teacher rural school? In time of recitation, length of school work, qualification of teachers and supervision, the graded schools of the cities have much the advantage over the typical country school. Yet this inefficient school in the country is costing, relatively speaking, more than the city school. Absolutely, gentlemen, the country school is costing less. You are not putting as much money into the rural schools as your city neighbors, but your school system is not economical. Even for inferior schools you are paying a larger price per pupil per month; and, if efficiency is joined with expense, the cost to the county is multiplied many fold.

Not only is the single-teacher school expensive and inefficient, but it is inadequate to perform the service which is demanded. Think you that we can add the simplest agricultural teaching or the mere elements of domestic science or anything of the industrial arts to the burden which the single teachers are now carrying? Think you that there can be addition to the twenty-six recitations or any subtraction from the twelve minutes of each recitation which is now possible in these single-teacher schools? It simply cannot be done. They are inherently inadequate. They fail to do satisfactory work, and society, their creator, must substitute another institution for them. We can never have a proper rural school situation in Tennessee as long as we depend so largely upon them. They must be abolished as fast as circumstances will permit. Never, perhaps, can all of them be abandoned; physical conditions demand a retention of a large number. So let no one think that we would ruthlessly abolish them; that we would go about this work in a tactless way, or that at any time we would leave any of the children of the State without school facilities.

It is a work which calls for wisdom and tact and knowledge, as well as courage on the part of the school authorities, and should never be begun until after thorough study and a comprehensive grasp of the situation. But consolidation is the condition of school progress in the

State. We can never have opportunities for the boys and girls out in the rural regions equal to those enjoyed by their city cousins without entering upon it. I should hesitate in so positive a statement were it merely my own opinion; but I know that school men of America are practically unanimous in urging this general school policy. I know that in some parts of our own State we have entered upon it with signal success, and that in other States, in all the progressive States educationally, the work is going steadily forward. Consolidation means better teaching, because the schools can be graded, and even the teachers which we now have can do better work with fewer classes and longer periods. It means a better teaching force, because in a consolidated school there will be a community interest and opportunity for the teacher who has specialized in certain work to find the grade to which she aspires; and there will be attractions and inducements in the work of such a school that are absent in the isolated one-room schools. It will give an opportunity for supervision, which is now impossible, for with the schools of the county grouped at accessible points, the experts employed to give direction to the school work can easily make their rounds. It will mean larger enrollment and better attendance, as is attested by the universal experience of those who have fairly tried it. It means the opportunity for vitalizing the course of study, for putting in the subjects which the new times so much demand, which you men, the intelligent farmers of the State, know are necessary if the schools are to function for rural life. It means, gentlemen, that thing which we have talked about and dreamed about—the school as the center of community life. It means that in these new institutions we can undertake some enterprises which will be worth while to the adults of the community, which will draw them to it by reason of its contribution to their life, and will get such a grip on them as to make the success of the school assured, and at the same time help check the decay of country life. Gentlemen, let me urge you to give us your support in working out this new type of school—the consolidated school.

So far as I have been able to observe, there is just one danger in the policy of consolidation, and that is putting educational advantages out of the reach of some boys and girls. But this danger vanishes when transportation facilities are provided. Transportation and consolidation are really one movement, and the latter cannot be successfully carried to its logical extreme without the former. I wish I had time to enlarge on transportation before this audience. I wish I could tell you of its progress in Madison and Shelby Counties of our own

State and in the progressive communities of the country; that it has operated successfully in the broad prairie lands of Indiana and the mountainous regions of Vermont, in a widely scattered population as exists in Florida and the Dakotas, and the thickly settled districts of Massachusetts; that in our neighboring State of Virginia, in Mississippi and Louisiana it has been notably successful, the first of these States having spent for transportation in 1905 \$2,500 and last year \$50,000; that it has been used where the roads were good, where they were bad and indifferent, and especially that bad roads have not proved effectual barriers to it.

I ask you men to help us in this work, that we may have in the country an efficient system of schools—schools whose efforts will be directed toward the betterment of country life, where work will be vitalized, intrinsically interesting, that will make strong men and women capable of successfully coping with the serious matters of government, of social and industrial life that confront us. We cannot solve the problem of the rural school without your help; you cannot solve the larger problem of country life without ours. Our interests are identical. Let us join hands, let us touch shoulders, for our children's good, for the glory and honor of the State.

THE FARM HOME.

Address by George Allen Hubbell, Ph.D., President of Lincoln Memorial University, Before East Tennessee Farmers' Convention and Institute, Knoxville, Tenn., May 21.

Introduction.—There is a wide distinction between a house and a home. The house in which many of our farmers live is of a type to commend itself neither to the judgment nor the convenience of those who have enjoyed the real comforts of life.

1. *The Location.*—The contour of the land will at once determine the character of the site for the house. In general, it is desirable that it should be on an elevation—not too far above the surrounding country, as at the top of a high hill, but with the land sufficiently rolling so that the water may be carried off in all directions. The house would preferably be built upon dry, gravelly soil, and if it is built upon damp or clayey soil, proper drainage should be provided. It should not be too near other buildings, both as a protection against fire and lest the atmosphere be shut out and the conditions of life rendered less favorable than they ought to be. Light, fresh air and a pleasant outlook are all desirable. It is really objectionable to have a house in

a hollow, or, at least, at the bottom of a hill. Such a position invites dampness, the washing and pouring down of the soil in all directions, and the surface water is likely to drain into the cellar or into the well.

2. *The House*.—The house should be of about the right size for a family, present or prospective. The cellar would best extend under the whole house. Paint should be applied, especially the prime coat, as soon as possible after the construction of the house, before the wood gets dried by the sun. If this is not done the tendency is for the wood to soak up the oil in the paint, not leaving enough to bind the mineral material together. The number of rooms should be sufficient to provide a satisfactory living room, and kitchen and dining room, and



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enough bedrooms to accommodate the members of the household without undue crowding. The house should be comfortably arranged. As far as possible, have the floors on one level, so that it may not be necessary for the wife to step up or down in coming from one part to another of the same floor. Stairways should be carefully made, with the steps not too high, and none of them sloping out, and all stairways should have a good railing so that there may be no danger of a fall.

(a) *Interior Furnishing*.—All the furniture in the house should be chosen and planned for use, and not chiefly for show. There should be an abundance of the necessary machinery for churning, washing and carrying on the various activities of the home. Provision should also be made for amusements. (b) *Water Supply*.—An abundant supply of good water can be furnished at small cost and is extremely

important. Water should be piped through the house and pumped by a ram or other mechanical means. If it has to be carried from a well or pumped by hand, there is danger that it will be used sparingly.

(c) *Sewage*.—Sewage should be taken care of by a septic tank or other safe method. (d) *Heating*.—The common system of heating the smaller houses is by means of stoves, but it is possible at a very small figure to use a kind of heater for a small house, very much like that used for heating cars, and such a system can be taken care of at less expense and with greater safety than the ordinary method of heating with stoves. In many places where wood is abundant it is possible to have an air-tight stove which will readily keep fire overnight and keep the house at a satisfactory temperature. Another benefit of stoves of this kind is that a fire may be kindled very quickly and the heating may work in a very satisfactory fashion. (e) *Lighting*.—An excellent method of lighting is by means of acetylene gas generated in a carbide-feed generator. An electric light plant, which can also furnish power to the farm, is perhaps more costly to install, but is not expensive to keep up.

3. *The Yard*.—On many of the farmsteads the yard is too large and serves as a pasturage place for geese, chickens, a stray calf, and sometimes for the family horse. This use of the yard is not in keeping with good taste or good manners. The yard should be large enough to afford a roomy place for the children to play, and should add some beauty in the way of landscape. It is well if this yard of which I speak can be chiefly in front of the house, so arranged that the foliage and shrubbery may be banked along the side, and a space left open in the center, where a good sod may be maintained. No path is better than the cement, but in many places paths can very well be made of cinders or gravel, and even a board walk is far better than the method of tramping about in the mud. It is not enough that the place should be dry, and that walks should lead from place to place, but there ought to be grass and flowers and shrubbery, that the beauty in one's soul may be gratified. Many a farmstead can very well have a good-sized yard, suitably kept, as a play yard for the children. This yard should have nothing in it which is likely to injure the children, and at the same time there should be in some part of it adequate shade. In many of these second yards a sand pile and some little apparatus for the children to play will be of very great value.

4. *The Garden*.—As to arrangement, the garden should be near to the house, rather than far from it, so that many of the odd minutes would be carefully and economically spent there. It should also be

near in order that the vegetables raised there may be near at hand for use. Perhaps on the farm, more than in almost any other kind of business, nearness is an advantage, because there is no well-organized delivery system for bringing in supplies for the home. As to shape, the garden should be longer than it is wide—usually twice as long as it is wide—and it should be supplied with all of the vegetables and in some part with the smaller fruits, rhubarb and such a supply and variety as will abundantly furnish the table.

Conclusion.—There is a wide distinction between living and making a life; and for making a wholesome, useful and effective life, adequate provision must be made for a comfortable and safe home life. It must be a place where the body can be healthful, wholesome and natural, a place which will invite the soul and develop such manhood and womanhood as will result in a sound citizenship.

Rural life has its own problems and its own opportunities. In the city and town the individual is the unit, but in the country the family gains a new importance, and the needs and opportunities of rural life cannot be met without taking account of the needs of the family as a whole.

Noble and great homes will develop a great and noble people.

SILO INDISPENSABLE ON MODERN FARM.

Address by J. N. Meroney, of Dark's Mill, Before East Tennessee Farmers' Convention and Institute, Knoxville, Tenn.,

May 22, 1912.

What is a modern farm? It is one run intelligently, with a steady aim to sustain or add to its fertility year after year, and at the same time show a profit for its owner.

A farm in Tennessee, if run with a profit to its owner or manager, and year after year sustain or add to its fertility, must keep and feed live stock. Diversified farming is the only safe and practical way of sustaining or increasing farm fertility. We must grow crops to feed to live stock on the farm, so that the elements of soil fertility are retained on the farm, and not sold off in grain or hay.

Then, with this definition of modern farming fixed in our minds, and the necessity of feeding live stock on the farm a settled question, we must then study the economic side of that live stock feeding, and this brings us directly and positively to the silo. As a means of economic feeding it is no longer an experiment, but now a demonstrated fact, that the use of the silo is the cheapest and most satisfactory as

well as the most convenient manner of feeding live stock through the winter, while the intelligent use of pastures is the cheapest and most satisfactory plan for the summer. So to combine the two enables the farmer to feed his live stock all the year through and at the same time be improving the fertility of his farm. The corn crop has always been the great standby of the Tennessee farmer, but it is a very exhausting crop on the land; and especially, if sold off as grain, it is sure to reduce the productive power of the farm very fast. So we should grow as little corn as we can and make the best possible use of it when we do grow it. We are in the habit of growing a corn crop, letting it mature in the field and gathering the dry grain and selling or feeding it; we do not think that half our time is wasted in growing that corn crop when we use only the grain; the grain is really only about half the value of the crop on good land, but on thin land, where we find nubbins and barren stalks, the grain is less than half the value of the crop. The whole crop of the field, the good corn, the nubbins, the good stalks and the barren ones, all together, put into the silo, will more than double the real feeding value. Then why should we longer incur the great loss? The modern, successful farmer will not do it; he cannot afford to do it. If, by the use of the silo, he can get as much feeding value out of ten acres as he can get by gathering and feeding the grain from twenty acres, it looks foolish to do without the silo; but the modern successful farmer will use the silo, cultivate less land and have more for pasture. He makes and saves more manure to apply to the lands that he does cultivate, and all the time the lands in pasture are resting and increasing in fertility, so that when they come in the proper rotation for cultivation they pay in bountiful crops for the labor bestowed upon them. Then we see that the silo is indispensable on the modern farm.

The population of our country is increasing very fast, while our tillable farm lands have almost reached their maximum acreage; then it becomes a burning necessity that we must increase the production per acre or we cannot feed the fast-increasing millions of our people. The farmer has the job on his hands, and it is a big one, and the responsibility rests on the modern farmer to increase his production and at the same time keep up the productive power of his farm. Diversified farming, proper rotation of crops, feeding live stock economically, selling off as little of his soil fertility as possible in grain and hay, retaining his soil fertility by feeding his raw material on the farm, making a finished product in marketable live stock, saving his manure carefully and returning it to his soil, making an acre produce more

than two have been doing—this is modern farming; and in carrying out this line successfully makes the use of the silo indispensable on the modern farm.

What is the silo? It is any kind of an air-tight structure with a depth at least twice as great as its diameter. It may be made of various forms, and can be made of brick, stone, concrete or wood. The form that shows less loss or spoilt silage is a round silo, and the cheapest and easiest to build is the round stave or tub silo, made of 2x4 timber, set up like a huge tub, and drawn up air-tight by hoops of five-eighths round iron, with threads and nuts on the ends where they pass through iron lugs, so as to draw against each other when tightened with a heavy wrench. The best timber for this use is straight 2x4 pine or cypress pieces, well seasoned. Any farmer who is handy with tools can build one at about half the cost of the factory-built ones and will do just as good service. Then, while we are studying economy in other things, why not in this also? So the modern farmer will build his own silo; and then, with that almost indispensable farm power, the gasoline engine, he will fill it easily and use it freely. Build in size suitable for the amount of stock to be fed; but two silos of medium capacity are better than one large one holding as much as both.

There is no risk in this. It is now well demonstrated that silage is the cheapest and most satisfactory food for cattle and sheep, and every farm should have its silo, as necessary as its corn crib or hay shed. Corn and cowpeas, planted and grown together, make the best silage, and make good yields and keep well when put in silo.

For better preservation of the stored product, the round silo has proven the most successful, and when the question of economy is considered the round stave silo takes the lead. It is cheaper to build, lasts longer than any other kind of wooden silo, and has proven entirely satisfactory to men who have used them longest.

I will explain to you how simple it is and how easy to build, and urge you not to let this summer pass without building one on your farm for next winter's use. If you have a dry, clay soil, not subject to water rising in it, or the rock is not too close to the surface, it is the cheapest plan to first dig a round cistern in the ground near your feeding place, say 8 feet deep and 10 or 12 feet in diameter or more. Lay a border around the top of this in a perfect circle of two bricks thick, laid in cement mortar, as a foundation for the wooden tub to rest on. The foundation should be the length of the brick wide and built either two or three bricks high. When this is done, set up four good, stout

posts in position for your roof to rest on. These posts should be higher than the silo will be, but they can be used for a scaffold while building the silo. Then build roof on them after silo is complete. When your scaffold is ready, set up the first stave, one end on the brick foundation, back about two inches from the inside edge; plumb this and nail to the scaffold to steady it. Across this stave nail on the inside, near both top and bottom, an old barrel stave. Set up the second stave close as you can and confine in place by driving a small nail through the old barrel stave; and the next stave the same way, conforming to the circle of the foundation. Add more old barrel staves as needed, and continue this until the big tub is set up and held in place by two complete inside hoops of old barrel staves; then there is nothing in the way of placing the iron hoops on the outside, marking out the doors and spacing the hoops to suit the doors. The doors should be 24 inches wide and 28 inches high. Mark these out and fit on them heavy buttons of wood or iron fitted to the curve after the hoops are drawn up tight; then saw out the doors with a bevel larger on inside, so that when in place the pressure of the silage will hold them in place. Two doors are enough. Place one about eighteen inches above the surface of the ground, the other six or seven feet above it. The joint where the wooden tub rests on the brick foundation is made air-tight with cement mortar, and it is best to plaster down on the clay wall on inside about two feet to keep out surface water. Any kind of a cheap gabled roof will do that will keep out rain and snow.

Silos must be filled from the top and food cut up fine and well packed by tramping all the while in filling. In feeding, cut the silage used always from the top, feeding off a light layer every day. Do not let any air in from below. By feeding from the top a few inches every day, the feed will keep in good condition until used up. Build a silo in size proportioned to the number of stock to be fed; and it is safer and better to have two 50-ton silos than one to hold 100 tons when only twenty or thirty cattle are fed.

Every farm should have its silo as universally as its corn crib, and I really believe that if we had to tear down the silo every year to get at the contents, like breaking the shell of a coconut, it would pay to do so; but, on the contrary, my silos have done good service for nineteen years. So let me again urge you, for economy's sake, to build a silo this year and fill it for next winter, and you will find it a paying investment.

CEMENT STUCCO SILO.

Address by J. W. Hart Before East Tennessee Farmers' Convention and Institute, May 22, 1912.

Corn silage is now generally recognized as an actual necessity on farms where cattle are fed, whether for milk or for beef, and the best form of silo to build is one in which many farmers are vitally interested. The style of silo most popular in the United States has been the iron hoop stave silo, and under certain conditions—as, for example, where timber such as heart pine or cypress is cheap, or on a rented farm—this will be the best type to build. Because of its short life and liability to collapse when empty, the farmers who have had experience with a stave silo, when they come to rebuild, usually want a more durable structure which has the additional advantage of being fireproof. All of the materials that are used in the walls of ordinary buildings, such as wood, stone, brick and cement, have been used in silo construction.

Cement silos may be divided into four distinct kinds—namely, cement block, cement monolithic or one-piece silos (built with wood or metal forms and usually reinforced with metal), cement on wood lath, and cement on metal lath. In northern climates, in order to better protect the silage in zero weather, the best cement silos are built with a dead air space in the walls, but in the Southern States a single wall, properly reinforced, is all that is required.

Under favorable conditions, for example, where plenty of suitable broken stone or gravel is convenient, and where several farmers can combine and use the same forms in building, the monolithic is usually the best type of cement silo to erect, but rock and gravel are costly building materials in some sections, and under such conditions the cement stucco silo has been found a desirable type. The strength of this silo, its durability and low cost of construction, and, lastly, its neat appearance, are points that are making it increasingly popular. The main difficulty in building this type of silo seems to be to get expert plasterers who are familiar with cement work. The writer has succeeded in getting ordinary plasterers to make a satisfactory job of plastering with cement mortar where he insisted that the mortar should be mixed in small batches so as to be put on the lath within half an hour after mixing; that the second coat should follow the scratch coat before the former has died out, and that the work should not be excessively troweled nor disturbed after the initial set of the cement mortar. The following bill of materials has been prepared for a small

cement stucco silo 28 feet high by 12 feet in diameter, erected upon a 3-foot wall 12 inches thick. The silo has a capacity of 70 tons, and is provided with a roof, but is without a floor, which latter may be considered desirable, though not actually necessary. The walls above the foundation are to be $2\frac{1}{2}$ inches thick, and a continuous door and chute have been provided for.

BILL OF MATERIAL FOR 12-FOOT BY 28-FOOT CEMENT STUCCO SILO
ON CEMENT MONOLITHIC FOUNDATION.

Foundation— $4\frac{1}{2}$ cubic yards of cement, which will require $5\frac{1}{2}$ barrels of cement, $2\frac{1}{2}$ cubic yards of sand, and 4 cubic yards of broken stone or sifted cinders.

Wall—The wall is to be $2\frac{1}{2}$ inches thick and will require 21 barrels of cement, 10 cubic yards of sand, 3 barrels of lime, 1 bushel of plasterers' hair.

Reinforcement—135 square yards of B. B. herringbone ingot iron or steel lath (27 gauge, painted); 2 pieces of soft steel or iron 3-8-inch by 2-inch 26 feet long (if shorter, allow 1 foot per lap), punched with $\frac{1}{2}$ -inch holes 4 feet apart; 60 feet of $\frac{1}{2}$ -inch cold twisted steel bars; 400 feet of 3-8-inch cold twisted steel bars; 2,000 feet of 5-16-inch cold twisted steel bars; 16 pieces $\frac{3}{4}$ -inch galvanized iron pipe 5 feet long; 24 iron bolts 15-inch by $\frac{1}{2}$ -inch for chute and roof; 12 iron bolts 12-inch by $\frac{1}{2}$ -inch for securing metal door jambs; 2 pounds of washers for $\frac{1}{2}$ -inch bolts; 20 pounds of 10-penny wire nails; 5 pounds of 20-penny wire nails; 5 pounds of 8-penny wire nails; 10 pounds of No. 14 solt galvanized iron wire.

Chute—Nine pieces of galvanized iron roofing 2 feet by 8 feet; 4 pieces of wagon tire 6 feet long, bent to curve of chute, punched with $\frac{1}{2}$ -inch holes 1 inch from each end; studding, staging and roof (octagonal); false studs to be on 18-inch centers; 2 pieces of 4x4-inch by 18-foot lumber; 60 pieces of 2x4-inch by 16-foot lumber; 30 pieces of 2x4-inch by 14-foot lumber; 400 linear feet of 1x3-inch lumber; 400 linear feet of 1x3-inch lumber; 20 pieces of 1x12-inch by 12-foot lumber; 24 pieces of 1x8-inch by 16-foot lumber; 16 pieces of 1x6-inch by 16-foot lumber.

Roofing—Three squares of rubberoid or similar flexible patent roofing; 1-18-inch galvanized iron ventilator (not necessary, but will add to appearance).

Miscellaneous—Ten gallons of gas tar; 5 gallons of gasoline; 2 roofing brushes.

Continuous Door—75 square feet of T. & G. mill flooring $1\frac{3}{4}$ inches thick.

The foundation may be of brick or stone where these are available, but in most cases a more satisfactory wall will be secured by following the instructions given in the United States Bureau of Animal Industry circular No. 136, entitled "How to Build a Stave Silo," taking care to bed short rods of 3-8-inch square iron 3 feet apart all around the wall, said rods to be one inch from the inside face of the wall in order to be entirely covered with cement plaster.

As soon as the foundation is dry enough to work on, false studs, which are to hold the cement lath temporarily, are to be erected on the wall at a distance of 18 inches apart from center to center. The doorway should be located wherever it may be convenient. The doorway is made by erecting two temporary 2x4-inch studs 24 inches apart from inside to inside; these are placed on top of the wall, each with a face continuous with the inside finished wall of the silo. These are to be trued and braced. The balance of the 16-foot temporary studding should now be put up, using a few strips of 1x3-inch lumber, bent horizontally around the inside of the studs to hold them perpendicular. If these 1x3-inch strips are placed 7 feet apart, they will answer to carry the staging on the inside of the silo. The studs should be set on the foundation wall and with the inner 2-inch face exactly $1\frac{1}{2}$ inches back from the inner face of the wall, using 4-foot splices to the bottom of the silo for supporting the free ends. By setting the studs in this manner the final inside coat of plastering will be continuous with the inside of the foundation wall. As soon as the first course of studs has been set up, a saw-cut should be made in each, cutting half through from outside to inside 7 feet above the foundation. This saw-cut will facilitate getting the studs out of the silo after the outside has been plastered, and similar cuts should be made half-way up the second or top course of the temporary studs. After plumbing and staging the 16-foot studs, staging boards should be laid on the 7-foot and 14-foot levels, all staging being kept inside the walls. The next thing is to firmly wire the metal lath on the outside of this temporary studding, using a 3-8-inch square twisted steel bar on every stud between the stud and lath. At 4 inches back from the door frame use $\frac{1}{2}$ -inch perpendicular rods, and wire all together firmly at every stud. Place the 2-inch by 3-8-inch iron bars which are to form the jambs of the continuous door frame; they are to be placed perpendicularly 26 inches apart along the center of the 4-inch studs first erected on the outside. These bars are secured to the silo wall by $\frac{1}{2}$ -inch bolts 12 inches long every 4 feet, the bolts being fastened to the metal lathing by means of tie wires. It is better to bend the bolts

slightly near the center in order that they will not turn when the nuts are tightened up. The 5-16-inch horizontal rods should now be put on directly over the metal lath. First place three rings around the base of the silo just above the foundation; space the horizontal rods 4 inches apart at the bottom, gradually increasing the spacing to 8 inches half-way up the silo and 12 inches at the extreme top. The ladder rungs, made of 3-8-inch gas pipes cut into 5-foot lengths, should be adjusted as the horizontal rods are being placed. They may be easily bent at a point about 17 inches from each end to conform to the curve of the silo wall, into which the ends are bedded, leaving the middle 26 inches of the pipe straight. The gas pipe is wired to the face of the silo across the door frame by running two or three strands of wire through the pipe, which wires run completely around the silo. The ends of this pipe are to be entirely concealed in the plaster. All other wires, except those running through the pipe, are tied to the $\frac{1}{2}$ -inch rods 4 inches from the door jambs. Reinforcing rods that run through the ladder rungs are spread apart in the walls of the silo as previously described. Projecting $2\frac{1}{2}$ inches from the finished wall of the silo, 15-inch bolts, bent to form a right angle, are wired so as to carry two 2x4-inch perpendicular strips on each side of the door frame, which strips are put on after the wall is finished. The strips are for the purpose of securing the sides of the chute.

Before commencing to plaster, 15-inch bolts should be wired to the lathing at the top, projecting $2\frac{1}{2}$ inches above where the cement stucco stops, and if an eight-sided roof is to be used, eight of these bolts should be fixed as described. After the inside staging has been built and thoroughly braced, a hanging circular stage, made of short pieces of lumber, is hung outside of the silo wall from two 4x4-inch by 18-foot pieces crossing the top of the silo at right angles. The outside stage is hung from these supports by means of four ropes, and may be raised or lowered with or without pulleys.

The first or scratch coat of plaster is applied to the inside of the silo between the studs, beginning at the top, and is composed as follows: Portland cement, 5 parts; clean, coarse, sharp sand, 12 parts; and lime putty, 1 part, with sufficient long cow hair to key. Before hardening it should be well scratched to form a key for the second coat. The first outside coat is mixed, applied and scratched in the same manner, and is to be followed later by the outside finishing coat, not allowing over half an hour to elapse between putting on the first and second coats. The second coat is of sand and cement in the proportion of two parts of sand to one part of cement. During hot, dry

weather the walls should be kept damp for a couple of days by sprinkling or by hanging damp burlap in front of the finished work.

After the outside has been finished, the finishing coat should be applied to the interior, beginning at the top. The inside staging is taken down section by section, the studs being cut off at the saw-cuts made before beginning to plaster. It will be advisable to thoroughly saturate the dry wall with water as the second inside coat is being put on. No coat of plaster should be over three-fourths of an inch thick, and the finished wall should be $2\frac{1}{2}$ inches thick, except near the door, where the plastering is 4 inches thick for a space of one foot from the jamb, tapering off from this point to the regular wall thickness. This thickness at the doorway will appear on the outside of the wall and should be made by an additional plastering or two before the finishing coat is applied, as the cement mortar will not properly adhere to a wall where a coat of it is plastered over one inch thick. The fact should be emphasized that the different coats of cement should follow each other rapidly in order to have the wall hard, solid and impervious through and through. In hot weather the two outside coats should be put on within a half hour, and it is advisable to thoroughly wet the wall as the final interior coat of cement is being put on. Before putting on the roof, pull the outside circular staging up to the top of the finished wall, cut and bolt down the plates, nailing the corners of the plates together with short splices. The rafters are placed to give the roof the desired pitch, and the roof should be sheeted horizontally from rafter to rafter. Circular No. 136 shows a doorway in roof gable, and also a roof with a trap door. The former is preferred when a chain-carrier is to be used in filling the silo, while the trap door will be found satisfactory if a blower is used. An 18-inch galvanized iron ventilator at the top adds to the appearance of the silo. The roof should have a 3x3 foot projection over the top of the chute, which stops within three feet of the roof. The galvanized iron chute covers the face of the doorway, extending from a point 3 feet below the eaves to within 4 feet of the ground. The framing for the chute consists of four pieces of wagon tire 6 feet long, bent in the form of a capital "U." The U-shaped irons are bolted to the 2x4-inch strips next to the door jamb at the top and bottom, then at the places where the corrugated iron sheets lap they are joined vertically at the two points one-third of the distance from either end of the U-shaped irons by three wooden strips inside the irons, upon which strips the corrugated iron roofing pieces are lapped lengthwise. The corrugated iron roofing is now wired to this skeleton, beginning at the top, the lap being opposite to that of

weatherboarding, in order that the silage shall not lodge when being thrown down. Before filling this silo it should be tarred inside with common gas tar, thinned with gasoline, if necessary, to the consistency of paint.

This cement silo should be built at least two weeks before it is to be filled in order that the cement may harden. Tarring may be conveniently done while filling the silo by taking advantage of the intervals between fillings.

EXPERIMENTS IN OTHER STATES HELPFUL TO DAIRYMEN IN TENNESSEE.

Address by J. H. McClain, United States Department of Agriculture, Washington, D. C., at East Tennessee Farmers' Convention and Institute, Knoxville, May 22, 1912.

Tennessee is regarded by States further south as being further advanced along dairy and live stock lines than themselves, and some people regard Tennessee as the Mecca of good cows. Natural conditions make the State superior in some respects to others near by for dairying, but, with all due appreciation of the progress Tennessee has made, some of these States are practicing methods which this State would do well to imitate—in fact, must imitate—if it progresses as it should.

Poor cows are the bane of dairying the world over, and any section that is not fighting this evil systematically is sacrificing great profit and harboring discouragement for its dairymen. An evil without a remedy is a condition which should not be mentioned, but for the poor cow evil we have the scales, the Babcock tester and the record sheets, which, if intelligently used, are a specific, and it is so simple that any farmer who can read and write can use it effectively. In sections where dairying is not practiced extensively individual farmers are compelled to do their own record work, and this is what every farmer should do; but, since many will not take the trouble, a plan has been borrowed from Denmark whereby the farmers can hire this work done. The plan is called Cow Testing Association, and simply means that a number of farmers combine and employ a man to visit their places monthly and keep their records for them, and each man pays in proportion to the number of cows he keeps.

Dairymen owning enough cows to take the time of one man is necessary. It is customary for each farmer to board the tester and carry him to the next place of work or to deliver him to the nearest

railroad point. Twenty-six herds containing 400 cows, with an assessment of \$1.00 per cow, would give the man a salary of \$400 per year and board. Of course, these herds must be near enough together to enable the tester to visit one farm each day. This plan has many advantages. For a small sum the farmer gets his records kept, rations computed for his cows, and receives many suggestions along every line of his work which will help to increase profits. A Cow Testing Association in Michigan raised the average production of 263 cows 834 pounds of milk and 49 pounds of butter fat in four years' time. At 20 cents per gallon for the milk, this means that the same number of cows the fourth year exceeded the income of those the first year by \$5,049.60, and at 30 cents a pound for butter exceeded them by \$4,497.30, or an average per cow of \$19.20 in the one case and \$17.10 in the other. In Vermont a similar association increased in one year's time the average production of 400 cows 1,000 pounds of milk, or 116 gallons, which, at 20 cents per gallon, amounts to \$23.20 increased income per cow.

While these results have been accomplished away from home, they are none the less true and indicate what can be done elsewhere if the same principles are applied. Maryland has four and Virginia two such associations, and I believe that there are sections in this State where such organizations could and should be run with great profit to the dairymen. Sections around Memphis, Nashville, Knoxville and in the Sweetwater Valley should offer opportunities for this line of work.

When talking of getting rid of poor cows, it is inferred that better ones will take their places, and this necessitates raising them. Good cows are so scarce and their production so unreliable that raising is the cheapest and only reliable practicable plan within reach of the average farmer. Most important in this consideration is the bull. At the Missouri Experiment Station the daughters of the bull, Missouri's Rioter III, produced 3,230 pounds of milk, equal to 376 gallons and 147 pounds of fat more than their dams. At 20 cents a gallon for milk, this means that the heifers brought in \$75.20 more for milk, and at 30 cents a pound for butter \$51.60 more than their mothers. This, of course, is a remarkably good bull, but if Tennessee had bulls at the head of the dairy herds that would increase the production of each generation even one-fourth of the above amount, it would amount to a vast sum.

It is a fact that a large number of the best bulls in the country are slaughtered before their real value is known. To prevent inbreeding, they are sold to the butchers before their daughters come in to milk.

and thus have no chance to prove their worth. This condition costs the dairy industry thousands of dollars annually, and is one that can and should be remedied. County live stock associations, dairy organizations and other farmers' institutions could keep a bulletin board of available bulls, and at the meetings of these organizations dairymen could get together and effect exchanges which would give to each party new blood for the small cost of transporting the animal from one farm to the other.

One of the Southern States is forming bull associations in dairy communities. In such cases a number of farmers join the association and assess themselves for the purpose of buying the number of bulls needed for the community. A competent committee purchases the bulls, prescribes regulations for handling them, and distributes them to the best advantage in the various sections interested. After the bull has been in a place two years, he is exchanged for that of another section, thus giving each community new blood at no additional cost. Under this system the farmer not only gets new blood at no cost, but gets better blood than possibly he otherwise would by reason of the fact that the committee takes time and is in position to thoroughly investigate the merits of the animals before they are bought. In addition to this, the association holds periodic meetings, at which they transact any business that may arise and discuss with profit their various problems pertaining to dairying, etc. In such communities, if only one breed of animals is kept, and they are properly bred and handled, a reputation can be established for good cattle which will attract buyers from sections interested in that particular breed. I know communities that have a reputation for having good cows that has been established by blood that has radiated from one herd of good cows brought in years ago. Annually these sections are visited by buyers who pay excellent prices for cows.

But with all of our cows we must have feed, and, passing by the many fine crops that Tennessee can raise, I want to put particular stress upon the silo as one of the most important factors in good feeding. Not only is it adapted to dairy cattle, but beef cattle as well. No farmer that has as many as ten head of cows can afford to be without a silo. Some may think that the discussion of silos is not necessary in Tennessee, but last summer I found men who did not even know what silage was. No cheaper or better feed can be had than silage. North Carolina reports that it expects to assist its farmers in the erection of seventy-five silos during the coming summer, and Kentucky expects to exceed this number by twenty-five. Where these silos are

built many more will spring up, and this means great progress for the cattle industry, for it cheapens production, and this regulates profit to a large extent. Is Tennessee keeping pace with North Carolina and Kentucky?

Eight Southern States have organized forces for giving special aid and instruction along all lines of dairying to their farmers. These agencies assist the farmers on their own farms in building silos, furnish them plans for dairy buildings of all kinds, teach them how to keep records of their cows, to make better butter and feed the cows properly, and assist them with any special problems that arise concerning dairying.

Other things before mentioned have dealt with farmers already interested in dairying, but South Carolina has started some work in a rural school for the benefit of children. Scales and record sheets are loaned to pupils, and they keep the weights of the milk and feeds of their fathers' cows for a certain period and bring them to school, where they are taught how to compute the value of the milk, the cost of the feed, and from these the profit or loss of the cows. At intervals a man from the college visits the schools and teaches by practical demonstration the use and value of the Babcock test, separates milk which the children bring in, ripens the cream at the school, and then makes butter before them in a small, practical churn, and as the work is in progress explains the different principles involved. Talks are made on how to market in an attractive way the surplus butter of the farm, how to feed and care for the cow, and any other topics that may be of interest to those keeping one or a small number of cows. It is intended, when the pupils have learned something of butter-making, to institute contests among them, and at the expiration of these contests have the butter made by them brought to the school and judged and the criticisms explained by the college expert. Then it is proposed to find a market for the butter that the children have learned to make, and it is hoped that the usual price of 10 to 15 cents a pound for country butter will be raised to 25 or 30 cents, or even higher.

This line of work seems a little far-fetched in a program of dairy instruction, but I believe that when we get the children of the farms to see that something can be made from cows, many of them will be attracted to dairying as at least a side line to their future farming operations. But, even if this is never done, certainly there is great need for improvement in the method of handling cows and their products on the average farm. I once met a farmer who told me that he milked twelve cows and got only three gallons of milk in a day. Cer-

tainly the task of milking these cows twice a day with so little return is enough to discourage anybody, not only with dairying, but with anything that pertains to cattle. There are thousands of people living in cities who keep only one cow that will produce more than the twelve owned by this man. Better cows must be had if keeping them, even for family use, is made as common as it should be.

The advent of the boll weevil and the low production of cotton in the cotton belt are causing many sections to take an interest in all forms of live stock, and there are many States that are manifesting such an interest that it will only be a short time until Tennessee will have keen competition, and unless some of the methods for the improvement of dairy conditions are practiced intelligently, she will take a second place in dairying in the Southern States.

ANIMAL DISEASES.

How the Farmers of East Tennessee May Aid the State Live Stock Inspector in their Prevention and Control.

Address by Mr. George R. White, State Live Stock Inspector, Before
East Tennessee Farmers' Convention and Institute,
Knoxville, Tenn., May 22, 1912.

Mr. Chairman and Members of the East Tennessee Farmers' Institute:

It is needless for me to say in the beginning that I am much gratified at the opportunity afforded me at this time of meeting you, the farmers of East Tennessee, and talking to you about your relation to live stock sanitary control work in Tennessee.

The State Department of Agriculture maintains at public expense a live stock department to do what is popularly known as live stock sanitary control work. This work is done wholly and solely for protection and development of the live stock industry of the State. Its aim and only object is to protect and develop the herds and flocks, which simply means that the farmers' and stockmen's interest is being conserved by our efforts.

During the past year the Commissioner of Agriculture and the State Live Stock Inspector have devoted much time and thought to this particular branch of State work. We have endeavored in all respects to stamp out or eradicate those diseases we already had, and to pre-

vent the introduction of new diseases from other States. However, the success of the work and the beneficial results of our efforts depend largely upon the help, aid and assistance—hearty cooperation—of the farmers themselves.



Exhibit of Hereford Cattle, East Tennessee Farmers' Convention.

To intelligently and economically eradicate those various infectious diseases which we already have in the flocks, and to prevent the introduction of other infectious diseases from other States or foreign countries, we must well understand certain facts about the particular disease in question. We must know :

1. Its cause.
2. Method of transmission from one animal to another.
3. Effect of the disease on the individual animal.
4. How the transmission can be prevented.
5. How to cure the cases which have already developed.

We are, indeed, fortunate in knowing all of the above facts about all, or nearly all, of the fatal infectious diseases of animals now prevalent in Tennessee.

SUMMARY OF MEASURES NECESSARY TO PREVENT THE INTRODUCTION OF AND TO ERADICATE INFEC- TIOUS DISEASES OF ANIMALS.

1. Careful inspection at time of purchase.
2. Avoid purchasing animals from infected farms and premises.
3. Rotation of pastures.
4. Enforcement of the Federal Government and States rules and regulations which have for their object the protection of the live stock industry from transmissible diseases.
5. Clean and disinfected pens at all public stock yards.
6. Clean cars for transportation.
7. Cooperation of the live stock raisers with the State and Federal Government live stock sanitary authorities by reporting outbreaks of infectious diseases and complying with rules and regulations for their suppression and eradication.

The following diseases have been declared to be contagious, infectious or communicable by the State Department of Agriculture:

Sheep scabies, bovine tuberculosis, glanders, black leg, hog cholera, cowpox, Johnie's disease, lung worm, nodular disease, stomach worm and rabies (hydrophobia).

It is well that every farmer acquaint himself with the following two sections of the State law pertaining to control of animal diseases:

Section 1, Chapter 156, Acts of 1901, reads as follows:

Be it enacted by the General Assembly of the State of Tennessee,

That it shall be the duty of the owner or person in charge of any domestic animal or animals, who discovers, suspects or has reason to believe that such animal or animals as aforesaid are afflicted with any communicable disease, to immediately report the fact, belief or suspicion to the County Board of Health of the county in which said domestic animal or animals are found.

Section 6, Chapter 156, Acts of 1901, reads as follows:

possession any domestic animal affected with any communicable

Be it further enacted, That any person who shall have in his or her disease or fever tick, knowing such animal to be affected, or who shall permit such animal or animals to run at large, or who shall keep such animals where other domestic animals are not affected by or previously exposed to such communicable disease, may be exposed to its contagion or infection; or who shall ship, drive, sell, traffic or give away such animal or animals which have been exposed to such infection or contagion; or who shall move or

drive any domestic animal in violation of any direction, rule, regulation or order of said Commissioner of Agriculture or Live Stock Inspector, establishing and regulating live stock quarantine, or the restriction or spread of communicable diseases among domestic animals, shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be fined in any amount not less than fifty dollars nor more than one hundred dollars for each of such exposed or diseased domestic animals which he or she shall permit to run at large, or sell, ship, drive, trade or give away, in violation of the provisions of this act; provided that any owner of domestic animals which have been affected with or exposed to any communicable disease may dispose of the same after having obtained from said Commissioner of Agriculture, or the Live Stock Inspector, or the State Veterinary Surgeon a certificate of health for such animal or animals.

Sustain and encourage your County Board of Health in its efforts to enforce our rules and regulations.

Discourage illogical argument and opposition to the work which we are endeavoring to do.

Use your influence with members of the next General Assembly to secure an adequate appropriation to properly conduct along modern lines the necessary live stock sanitary control work which we find to do in Tennessee.

Talk the work *up* instead of talking it down.

You can do much to help and encourage the work, or you can do more to hinder and obstruct it. We can formulate and promulgate rules and regulations for the eradication of the infectious and contagious animal diseases which we already have, and rules and regulations which have for their object the prevention of the introduction of these dangerous and deadly diseases from other States. But, gentlemen, it is up to the live stock owners themselves to see that these rules and regulations are enforced by the local county health authorities, and that they are observed by the illegitimate and dishonest trader and the charlatan live stock raiser. Demand a strict observance and proper respect for our live stock sanitary control laws and your herds and flocks will soon be freed and remain free from contagious diseases.

Report outbreaks promptly whenever they are observed to the local county health authorities, and demand that they proceed without delay to afford you the protection prescribed by the law. In thus rendering

such aid you are performing the patriotic duty of a good and law-abiding citizen; you are in many instances protecting the human as well as the animal health.

INFLUENCE OF TILLAGE ON YIELD OF CORN.

H. D. Tate, Before East Tennessee Farmers' Convention and Institute, Knoxville, May 22, 1912.

In discussing the influence of tillage on the yield of corn, I will treat it under the two heads of (1) Influence of deep tillage in the preparation of seed-bed on the yield of corn. (2) Influence of tillage in cultivation on yield of corn.

The thing that has the greatest influence on the yield of corn is the supply of moisture and whatever affects the amount of moisture in the soil affects the yield of corn. The amount of water can be influenced by tillage, and there is no factor that affects the yield of corn so greatly as deep tillage and the preparation of the seed-bed. Poorly prepared seed-beds are responsible more than any other one thing for the low yield of corn in the South. It is more important to have a deep seed-bed here than further north, because of the higher tem-



Implement Exhibit, East Tennessee Farmer's Convention.

perature and greater evaporation. We, however, have the advantage of a heavier rainfall than in the so-called corn belt, but we fail to make the best seed-bed to store it up to be used during droughts. It

frequently occurs that we have droughts at the most critical period of the corn crop; therefore, a deep seed-bed is very essential in order to maintain a constant supply of moisture as far as practicable during the critical period of drought. Heat and moisture are essential for the best growth of corn; but it is too often the case that we have an abundance of heat, and a scarcity of moisture with disastrous effect to the crop.

It matters not how clearly we may understand the fundamental and scientific principles upon which the most successful farming operations are based, we will utterly fail if we lack the practical knowledge of how to carry them out. I am not prepared to state how well the majority of farmers understand the basic principles of agriculture (they appear to have a pretty clear understanding of them); but I believe that more failures are due to the fact that the farmer fails to properly carry out a given plan, rather than the fault of the plan itself. It is important to have a practical and economical plan of preparing the best seed-bed. I will give what has proved to be a very successful plan of preparing a good seed-bed.

The land should be double disced before breaking, so as to pulverize the surface of the ground and cut up the old stalks or stubble as well as the weed growth. If the land be turned without discing ahead it usually breaks up in more or less clods, which, when turned next the subsoil, interferes with capillary attraction. Water rises from a depth of several feet and capillarity is most effective when there exists a compact union of the finely pulverized surface soil with the subsoil. The upward movement of water is retarded if the soil is lumpy and there is a layer of cornstalks, weeds, etc. Beneath the soil turned there are air spaces between the lumps, and the rubbish almost destroys or renders capillary action very ineffective. As soon as the seed-bed dries out, the crop suffers for moisture. If disced before breaking, no clods or lumps are turned next to the subsoil, and as the vegetable growth has been cut up, the surface soil readily forms a compact union with the subsoil, and capillary action is restored. Follow the surface discing with a disc breaking plow, or a two-horse turning plow, set to cut a narrow furrow so as to edge the soil and break to a good depth. (If the land has been well broken in the fall, a thorough discing will put the soil in good condition without the extra and often unnecessary expense of turning in the spring). Follow the breaking with the disc harrow, or smoothing harrow to pulverize well before the clods have dried out and become hard.

The roots of corn penetrate to a much greater depth when un-

obstructed and attain much greater lengths than it is generally thought for. When the soil is deep, corn roots reach a depth of several feet, although the main body of roots are found from three to twelve inches deep. I dug up a stalk of corn last year that had been planted just twenty-five days and found its roots were forty-three inches long. A deep seed bed will allow the development of a more extensive root system, and the feeding capacity of the corn is thus greatly increased.

It is very important that the early cultivations be done properly. There are several reasons for cultivating—to kill weeds and grass, to permit a freer passage of air through the soil, to keep the soil in condition for absorbing the rains, and to conserve the moisture by maintaining a loose mulch that prevents its escape.

Corn should be cultivated just after planting, just as it is coming up, and again as soon as it is up, to kill the weeds and grass and to keep the surface in good condition. Cross harrowing with the double or spiked tooth, adjustable section harrow is a splendid implement with which to do the early cultivations. Usually the section harrow is run at about a 45-degree angle across the rows and with the teeth slanting backward to suit the condition of the ground. The fourteen-tooth harrow may be used, where the section harrow cannot be had, by removing the middle tooth and going right down the drill. The spring tooth attachment of the walking cultivator will do good work. The cultivations should be given from every seven to ten days, and should be continued until the corn is silking and tasseling, using judgment and taking care to do the work properly. Cultivate as soon after rains as the soil is in condition, even if the corn has just been cultivated to prevent crusting.

Judging from the results obtained in Tennessee on a number of demonstration farms last year, I am of the opinion that the yield of corn can be increased from 50 to 75 per cent by the adoption of deep and thorough preparation and intensive, shallow cultivation alone without the use of fertilizer. A number of demonstrators used no fertilizer of any kind and made handsome increases. The average increase per acre on seventy-two demonstration farms with a total of 232 acres was 73 per cent increase over and above the average yield per acre for the State.

The advent of the automobile does not appear to have affected the horse-raising industry to an appreciable extent. There is an increasing demand for good horses at high prices.

GRAPES FOR THE AMATEUR GROWER.

F. H. McClung, at East Tennessee Farmers' Convention and Institute, Knoxville, Tenn., May 21-23 (Horticultural Section).

My experience in the growing of grapes has been on "Black Oak Ridge," where conditions seem to be particularly well suited to fruits in general and grapes in particular; and I therefore attribute to a large extent whatever success I have had with grapes to "Black Oak Ridge." The soil is known, I believe, as "Knox Dolomite"—but grapes, like most vines, trees, etc., respond to *some* fertilizing. A friend who had had some experience with grapes told me he thought it would be a good idea to replant a vineyard about every twelve or fifteen years; that the vines seemed to wear out. I am sure he had not kept them well fed. I have some old vines—they were old when we got the place some ten years ago—I imagine they are thirty-five years old—that give excellent grapes. They have been fertilized, and the old tops cut off, and a new shoot grown from the ground.

I generally plant No. 1 two-year-old vines in rows ten feet apart—eight or nine feet apart in the rows—and if it is a new sort and I am anxious to see what it is I let it bear from five to ten bunches the second summer; but they must be well fertilized and tilled or worked.

In telling how I have treated our vines I am sure I am saying nothing new—for I have tried to follow what anyone can learn by reading what has been written many, many times. Generally the vines are allowed to grow at will the first season, are then cut back to say three buds; and the second season I grow one or two shoots, breaking off the others.

I find the "Kniffin system"—usually the four arms with two wire—very satisfactory. The wires are put up for the second season and the one shoot is brought up to the second wire, as they generally make enough growth—sometimes eighteen feet. That winter they are cut to the height of the top wire—five feet nine inches—and tied to both wires with raffia, the lower wire about three and a half feet from the ground. The next spring two shoots are allowed to grow on the top wire and two on the lower, and it is on these that I leave a few bunches; sometimes I leave only the two shoots for the top wire.

If the vines make vigorous growth the first year these four arms may be grown the second season. I now have three vines—this is the third season that I allowed ten bunches to mature to each, last year—that were treated thus. They now have eighteen shoots each, on which are say 54 bunches just now blooming; but of course I shall pull

off more than half, leaving the larger. This variety I do not know the name of. It is a red grape, medium berry and bunch, something like Wyoming Red; a good grape and hangs on the vine; eatable for three or four weeks. It was sent by mistake—the second only that I have had. I expressed sample last August to parties from whom I got them, but they did not name it; however, corrected the error by sending what I hope is the right sort.

As to pruning, I try to leave of old wood only the main stem, and bring out new arms each year, leaving these about three to three and a half feet. Some sorts—Niagara, for instance—need the longer arms. After the bunches have set I pull off some shoots and many bunches leaving, of course, the larger—on an average 40, though I have ripened 75 bunches of Delaware on five-year, set-well, grown vines. This, however, is risky, as I found to my sorrow one year. I had left the vines with a full crop, and we had a wet summer, and perhaps I had not fertilized them as I should. The vines made little growth, and the bunches would not ripen, would not color or become sweet; the wood did not ripen up, and I had a hard time at pruning to find matured wood for the next year—this on Brighton and Delaware particularly.

We sack everything with two-pound paper pokes, though sometimes I find four pounds necessary on some bunches—"Stark Star," for instance, and on a few "Brightons."

I spray about four times—Bordeaux 4-5-50 as the buds swell; a second time before blooming with Bordeaux and two pounds arsenate of lead. Some claim *that arsenate of lead with Bordeaux* is liable to burn the foliage. I have not noticed it. After fruit sets use the same spray, then put on the pokes; a fourth spray of arsenate of lead for the "leaf folder." If aphids are troublesome use a spray of tobacco or whale oil.

We think the Brighton the best grape we have; Delaware I suppose next. Green's Early is a good early white, and Moore's Early if allowed to ripen is fair. Lutie does well and is liked by many. Niagara and Concord are standards. Worden is excellent if it ripens evenly, which it does not always do for us; but it is always fine to use from the vines, eating the full ripe berries and throwing the others away. Catawba does well for us, and is a fine late grape, ripening about the first week of September, and frequently lasting till October 20. We have about twenty-five sorts, Moore's Early first and Stark's Star last, no ripening till first week in October. Have some young vines of Eclipse, which are claimed to be very early. We do not gather grapes till thoroughly ripe; not as soon as they color, but let them get sweet. I read

of one party who said he had raised Niagaras for some ten years before he ate a ripe one. It is not a green grape, but should have a decided yellow cast. Banner is a beautiful red grape, ripening about September 15. Some report it of Delaware quality, but I do not consider it so good. The Goethe is a late red grape; berry large, bunch medium, and when thoroughly ripe is of good quality, and hangs on vine well. Massasoit is quite a sweet red grape; good size berry, bunch medium. It does not seem to set well; it is rather uncertain. Jefferson and Iona have done fairly well; are quite similar if I have the *two* sorts; are not very vigorous. Triumph has beautiful, large bunches, but usually rots at ripening time; the flavor is good. Gantner is a beautiful, light red grape, berry large, bunch medium; is a good sort to have in a collection. Campbell's Early is an uncertain sort with me, as with most others. Some years I have had beautiful bunches; other years they are quite a failure. Have planted several of Munson's creations this season and am looking forward to seeing them fruit next year.

As to fertilizing, barnyard manure, of course, gives good results; have used some bone meal, and muriate of potash; have grown crimson clover in the vineyard and turned it under in the spring to good advantage. I think grapes are great feeders and need their full share of fertilizing.

THE AGRICULTURAL SPECIAL TRAIN.

The Agricultural Special Train, which is touring the State under the direction of the Tennessee Department of Agriculture, in cooperation with the railroads of the State, left Nashville promptly on schedule time on Monday morning, July 1, in charge of Commissioner T. F. Peck and a representative of the Louisville & Nashville Railroad, over the lines of which the train is making the run for the first six days.

The train consists of nine cars, and will make all the principal points in the State on the Louisville & Nashville, the Nashville, Chattanooga & St. Louis, the Illinois Central, the Mobile & Ohio, the Southern, the Queen & Crescent, and the Tennessee Central. All the equipment, except the Pullman sleeper, is furnished by the railroads cooperating with the Department. Each railroad furnishes an engine and train crew when the special goes on its lines.

On the first day out stops were made at Madison, Gallatin, Portland, Hartsville Junction and a night meeting held at Hartsville. Good crowds were had at each place in spite of inclement weather, and the outlook is for a most profitable tour of the State.

The Agricultural Special is only one feature of the Institute work to be carried on by the Department of Agriculture. County institutes will be held in every county not reached by the special train. Round-up or division institutes are held once each year in each of the three grand divisions of the State. The East Tennessee Institute was held May 21-23 in Knoxville. The West Tennessee Institute will be held in September in Jackson, and the Middle Tennessee Institute in Nashville in the early part of December.

TO ESTABLISH A SCHOOL OF COUNTRY LIFE.

The General Education Board, at a recent meeting in New York, made a donation of \$250,000 to the George Peabody College for Teachers at Nashville, Tenn., for the establishment of the Seaman A. Knapp School of Country Life. The late Dr. Seaman A. Knapp had been for the past ten years in charge of the farmers' cooperative demonstration work in the South, and it is conceded that he did more for the advancement of farming than any man engaged in teaching scientific farming. In connection with the donation a statement was given out in which it was said:

"The General Education Board has interests in the promotion of practical farming in the Southern States and in the development of an efficient system of rural schools. The George Peabody College for Teachers proposes to train leaders for rural schools; not for the traditional rural school, but a new school which shall meet the needs of an agricultural population.

"From the beginning it has been the purpose of the General Education Board to contribute to the endowment fund of George Peabody College for Teachers. After consultation with the President and Trustees of the college, it now makes a contribution of \$250,000 toward the endowment of the George Peabody College for Teachers and for the specific purpose of supporting the Seaman A. Knapp School of Country Life. For ten years the late Dr. Knapp was the recognized leader of the new agricultural life of the South. It is fitting that his name should be associated with the George Peabody College for Teachers, his great work perpetuated through this institution and his name associated with George Peabody."

The Farmers' Club of Hamblen County had an interesting meeting at Morristown, Saturday, May 11, at which addresses were delivered by Robert C. Crouch, J. S. Ford, D. A. Greene, George W. Helton and O. P. R. Fox.

A large increase in the acreage in tobacco in Franklin County is noted this season.

THE HOUSE FLY AS A CAUSE OF DISEASE.

A philosopher once said, "All the knowledge we get in life that is really worth while is a knowledge of nature's ways of doing things." This may be a slight exaggeration but it certainly has a practical bearing on the subject of disease prevention, because it is from a scientific knowledge of nature's ways of spreading disease that has emerged the possibilities of effective work in disease prevention. For instance, Yellow Fever was once a scourge to the South, slaying thousands of its people and closing its avenues of commerce. This disease is now all but a negligible quantity in health problems. This condition of affairs was brought about, first, by the scientific demonstration of the mosquito as the carrier of the disease from man to man, and second, by a concerted effort of health authorities and lay people in mosquito destruction.

The House Fly bears a relationship to Typhoid Fever and Dysentery similar to that which obtains between Yellow Fever and the Mosquito in that the Fly is not the sole, but an important factor, in the transmission of these diseases from man to man.

It was long ago observed that the prevalence of Yellow Fever corresponded to the prevalence of the Mosquito, and that the disease was more "ketching" at night, which is the mosquito's time to travel, but it was long before the mosquito was accused of being the transmitter of the disease.

It has also been observed that the prevalence of Typhoid Fever and Dysentery corresponds to the prevalence of the Fly, but the fly was not at the time accused of being a factor in the transmission of these diseases. Now the fact that the fly does spread these diseases is determined and the fight of Fly Extermination is on and should be waged till the death dealing pest is destroyed.

How shall the fight be waged? It would be profitable to first note the habits of the fly. Flies are hatched and reared in filth, chiefly (90 per cent) in stable manure. A period of about ten days is required for the fly to hatch and become full grown. Their multiplication is very rapid; in fact, one female fly may have billions of progeny in a season. Flies feed upon filth, and their feet are constructed to carry loads of filth on them. They can travel for some distance; in fact, they can remain in the air for hours without apparently tiring. The stomach of the fly is delicate in that germs can pass through the gastrointestinal tract of the fly and never be injured. Thousands of germs have been isolated from one fly speck.

How shall the fly be attacked?

First, by destruction of their breeding places. Without this fly extermination is impossible, because it is almost impossible to kill the pests as fast as they breed. So the screening of manure pits and the cleaning out of stables at regular intervals of seven to ten days will mean the destruction of 90 per cent of the flies. In rural communities each home must wage its own war on the fly. In towns and cities it should be a municipal work because one insanitary home and surroundings might supply the entire block with the pest and render the efforts of all the rest fruitless, however diligent they might be. This might be carried on in a number of ways. First, by anti-fly ordinances dealing specifically with the breeding places. Second, a method suggested by Prof. Hodge, of Clark University, which consists in offering prizes to the school boys of a block for the first flyless block.

Second, With other filth left exposed a sufficient number of flies can still be produced to be active in spreading disease.

So, clean up back yards, screen or cover garbage cans, screen closets to prevent hatching flies there and to prevent the entrance of flies after being hatched.

Third, Kill the living fly by swatting, trapping, poisoning, and starving.

All these methods may be employed. Swatting needs no explanation, of course. Trapping: This should be begun now, as one fly caught now is equivalent to millions caught in August. An excellent trap is one designed by Prof. Hodge, and can be secured at many hardware stores. A number should be placed at points where flies congregate. Poisoning is a very effective method. A teaspoonful of formaline to a quarter-pint of water placed in a room will serve to kill all the flies, but this should be placed out of the reach of children. Starve the fly by keeping its food screened, or especially by cleaning up back yards. Provide a screened garbage can and place all garbage or decaying vegetable or animal matter in the screened can.

The above is but a brief outline of the methods of attacking the fly. Most towns of much size have anti-fly ordinances, but the smaller towns or rural communities are burdened, and only by the hearty cooperation of all these can the much desired end of fly extermination be accomplished.

This Board will be glad to cooperate with any individual or municipality by sending literature, fly posters, etc., free of charge.

Yours respectfully,

STATE BOARD OF HEALTH.

LIVE STOCK IN THE SOUTH.

At the recent meeting of the Southern Commercial Congress it was again shown how the far-seeing leaders of all lines of business in the South are coming to accept the fact that the live stock business is forging to the front, says A. L. French in the *Southern Agriculturist*. It can no longer be denied a prominent position among the great enterprises of Dixie. The last day of the meeting was given up almost entirely to the discussion of various live stock questions, and the section meetings devoted to these questions were among the most enthusiastic of the congress. To those of us who have been preaching the live stock doctrine for many years the recognition of the fact that our work has borne fruit is indeed gratifying. We are inspired to put forth even greater efforts to hasten the day when live stock breeding and feeding will be one of the leading lines of work on every Southern farm.

The South will, within the lifetime of many of our people, become one of the great live stock sections of the world, our climate and soil conditions being especially favorable to this line of work. The advertising given this industry by the congress will, in no small measure, tend to hasten this time.

Successful agriculture is the basis of all wealth. A fertile soil is the basis of successful agriculture, and no country or section of country has ever maintained its fertility of soil without live stock. The fact that the great majority of the leaders of the South have not recognized the truth of this statement in time past is due very largely, I believe, to the slow progress that the live stock business has made until recent years. The impetus given this great line of work by prominent position accorded it by the management of the leading commercial body of the South will insure a marvelous department during the next decade.

The management of the Southern Commercial Congress has done well indeed. Its work will mark a milestone in the path of Southern progress, by reason of its broad recognition of the business that is at the root of all economical soil improvement. For—let me repeat it—successful agriculture is the basis of all wealth, and a fertile soil is the basis of all successful agriculture.

The continued rains during April and May put farmers all over the State far behind in their work, but the fair weather during the latter part of May enabled them to make good headway in getting in their crops.

BOYS' CORN CLUBS AND PIG CLUBS.

By direction of Secretary Wilson, of the United States Department of Agriculture, the work of the Bureau of Animal Industry in the South is to be carried to the farmer through the efforts of the State, district and county demonstration agents of the Bureau of Plant Industry. The valuable work of the Bureau of Animal Industry in tick eradication is proving of considerable importance in connection with the farm demonstration work. The agents in the farm demonstration work, on the other hand, are in position to do a great deal assisting the tick eradication work.

A plan has therefore been effected which provides for cooperation between the forces of the Bureau of Animal Industry and the Bureau of Plant Industry in placing before the farmers of the South the important facts connected with tick eradication. The arrangement further provides that the same general plan shall be followed in connection with the dairy work of the Bureau of Animal Industry and the animal husbandry work, especially that which has to do with hog raising. In connection with the boys' corn clubs it is proposed to encourage the organization of hog-raising contests. The demonstration agents have found the boys of the South greatly interested in the question of what to do with their corn when they have raised it. If they can get more money for it by feeding it to pigs they are going to do so. A number of the boys have already won prizes at county fairs in connection with hog-raising contests. The Bureau of Animal Industry experts will also cooperate with the demonstration forces in the matter of organizing poultry clubs, especially in connection with the girls' clubs.

The bringing together of the forces of the department as indicated above is expected to result in much good in giving the farmers of the South practical information along the lines of animal industry and plant industry.

The department is arranging also to carry work of this kind into the Northern States.

BUREAU OF IMMIGRATION ADVERTISING TRIP BRINGING RESULTS.

As a result of the work of the Department of Agriculture and the Bureau of Immigration in advertising the resources of Tennessee in the States of the North and Northwest during the past winter, a number of people from the States visited by the exhibits have been looking over the State with a view of purchasing farms and locating.

Many of these prospectors have been in Cumberland County, and

express themselves as well pleased with what they have seen. Among those who have been in Cumberland and adjoining counties are some oil men from Pennsylvania, who are now sinking wells to test that territory for oil.

A party of Holland Dutch from Marion County, Iowa, were in Tennessee during the latter part of June, and in company with J. J. B. Johnsonius, Assistant Commissioner of Immigration, and T. G. Settle, of the Department of Agriculture, visited the counties of Putnam, Cumberland, Roane, Cheatham, Williamson, Maury and Franklin. They were very favorably impressed with the sections visited, and will probably buy a tract of from 5,000 to 10,000 acres for colonization of Dutch farmers from Iowa.

There is a growing interest among the people of the North and Northwest in the advantages of Tennessee, and its opportunities in agriculture and the various lines of business.

AMERICAN POULTRY ASSOCIATION.

The American Poultry Association, the largest organization of its kind in the world, meets in Nashville, Tenn., August 9-17. More than a thousand poultrymen, and men interested in the poultry business, will be in Nashville during the meeting of the association. More than one hundred newspapers and magazines will have representatives here, and the city and State will receive a great deal of advertising from this meeting.

The headquarters of the association will be at the Hermitage Hotel, while the meetings will be in the Hall of Representatives at the State Capitol. On Friday and Saturday, August 9 and 10, the executive board will have meetings at the Hermitage Hotel assembly room.

The address of welcome will be delivered to the association on Monday by Governor B. W. Hooper, and the response will be made by Reese V. Hicks, of Topeka, Kans., President of the association.

The sessions during the week following will be most interesting, the addresses and papers, covering every feature of the poultry industry, to be presented by men who are prominently connected with the poultry interests of the country.

This will be an opportunity for the people of the North, the East and the West to see the great possibilities of this section of the country, and especially of Tennessee, for profit in the poultry business. As a result of the meeting of the association in the capital of the State, there will doubtless be many who will become interested enough to consider Tennessee for a future home.

CHANGE IN OFFICE FORCE.

E. O. Luther, Chief Clerk in the Department of Agriculture, tendered his resignation, to take effect June 30, and has been appointed Assistant Commissioner of Agriculture for East Tennessee, in the place of A. H. Tipton, resigned. T. G. Settle, formerly Statistician of the Department, was promoted to the position of Chief Clerk, and assumed his duties July 1.

PHOSPHATE FIELDS OF PUTNAM, JACKSON AND SMITH.

A complete survey and exhaustive study of the phosphate fields of Putnam, Jackson and Smith Counties will be made by the United States Geological Survey, said Rutledge Smith, Industrial Agent of the Tennessee Central Railroad, who has recently been in Washington. At the instance of Congressman Hull, Mr. VanHorn, an expert on phosphate, has been designated to do the work, which will commence in a few days. This will be of vast importance to the upper country, as this survey will reveal accurately one of the largest and richest phosphate fields on this continent and which is now in the process of development.

PROGRESS OF ROAD IMPROVEMENT.

Tennessee is making great strides in the construction of good roads, and as the work progresses, the sentiment for good roads increases in those communities which have not as yet made any advance in the work. Jackson and Cumberland Counties are now beginning the construction of pikes. When these roads are completed there will have been spent in the Upper Cumberland section more than a million dollars on good roads. At the first opportunity to vote on the question again, Smith County will probably appropriate about \$300,000. Overton County is also preparing to spend about \$200,000 on roads.

In East Tennessee, which is already far advanced in good roads construction, several counties are now at work building pikes. The sentiment for good roads is growing in Tennessee, and in the course of ten years there will hardly be a county in the State without a system of first-class pikes. The people of the State have come to understand the great economic value of macadamized public highways, and are willing to tax themselves to secure good means of transportation to market for their products.

FAIR DATES FOR 1912.

Following are the dates allotted for fairs to be held in this State for the year 1912, with the names of the Secretaries of the various associations:

Postoffice.	County.	Dates.	Secretary.
Alexandria	Dekalb	Sept 5-7	Rob. Roy.
Celina	Clay	Oct. 3-5	W. L. Brown.
Clarksville	Montgomery	Aug. 15-17	W. W. Riggins.
Cleveland	Bradley	Oct 15-18	B. D. Moore
Coal Creek	Anderson	Aug. 28-30	W. L. Wilson.
Concord	Knox	Sept. 10-13	F. H. Borling.
Cooneville	Putnam	Aug. 29-31	A. P. Barnes.
Deer Lodge	Morgan	Sept. 24-27	M. M. Goad.
Dresden	Weakley	Oct. 9-12	W. R McWhirter.
Dyersburg	Dyer	Sept. 10-14	W. C. Paris.
Fayetteville	Lincoln	Aug. 14-16	W. C. Moores.
Gallatin	Sumner	Aug. 22-24	W. Y. Allen.
Humboldt	Gibson	Sept. 18-21	C. W. Rooks.
Jackson	Madison	Sept. 24-28	W. F. Barry.
Kingston	Roane	Sept 3-6	T. E. Goodwin.
LaFayette	Macon	Aug. 15-17	M. H. Allen.
Lewisburg	Marshall	Aug. 6-9	C. C. Wallace.
Memphis	Shelby	Sept. 23-28	F. D. Fuller.
Clarksville	Montgomery	Aug. 15-17	W. W. Riggins.
Morristown	Hamblen	Sept. 25-27	R. F. Taylor.
Murfreesboro	Rutherford	July 30-Aug. 2	E. B. Kerr.
NASHVILLE			
(State Fair) ..	Davidson	Sept. 16-21	J. W. Russwurm.
Newport	Cocke	Sept. 18-20	J. F. Stanberry.
Rhea Springs ...	Rhea	Oct. 2-7	H. B. Pavne.
Rome	Smith	Sept. 12-14	A. T. Williams.
Shelbyville	Bellford	Sept. 5-7	W. E. Gant.
Sweetwater	Monroe	Oct 1-4	Jas R. Love.
Selmer	McNairy	Oct. 15-18	W. K. Abernathy.
Tullahoma	Coffee	Aug. 28-30	John W. Harton.
Winchester	Franklin	Aug. 20-23	T. P. Anderton.

GIRLS' TOMATO CLUBS.

Miss Virginia Pearl Moore, State Organizer of girls' tomato clubs, says that there are now 800 girls belonging to the various tomato clubs of the State, and in spite of the late season there is much enthusiasm. Government experts are now traveling over the State giving canning demonstrations. To the girls of the State the tomato club promises to be what the corn club is and has been to the boys.

Today we need leaders in agriculture more than captains of industry. The time is not so far distant when the agricultural schools will be the real universities of the people.—*C. R. Davis.*

SUMMARY OF JUNE CROP REPORT.

**T. F. Peck, Commissioner, Department of Agriculture,
Nashville, Tenn., July 1, 1912.**

The past month has been a busy one with Tennessee farmers. Owing to continued rains in the spring, all crops were late in planting. Notwithstanding the delay in planting, as a general rule, the ground was well prepared, and crops are now in good condition.

Corn is late, but is growing well. Most of the wheat crop is harvested, and the yield this year will probably slightly exceed that of last year. Oats are being harvested, and will show a considerable increase over last year's yield. Cotton will show a decrease in acreage. On the whole, it may be said that crops generally are in good condition, and present indications are for an abundant yield.

Below is given the summary for comparison of the report of this Department for the years 1911 and 1912:

	1911 Per Cent	1912 Per Cent
Cotton, acreage	100	82
Cotton, condition	80	71
Wheat (estimated yield), bushels	11	12
Gardens, condition	57	85
Oats (estimated yield), bushels per acre.....	17	21
Young Clover, condition	54	84
Meadow Grasses, condition	49	80
Millet, acreage	75	80
Corn, acreage	92	90
Corn, condition	80	76
Tobacco, acreage	60	85
Tobacco, condition	56	80
Apples, condition	36	68
Peaches, condition	21	84
Grapes, condition	80	87
Stock Peas, acreage	72	84
Irish Potatoes, acreage	82	85
Irish Potatoes, condition	44	82
Sweet Potatoes, acreage	77	85
Tomatoes, acreage	74	87
Tomatoes, condition	64	88
Peanuts, acreage	77	85
Peanuts, condition	70	84
Live Stock, condition	85	88
Alfalfa, condition	70	85

JUNE CROP REPORT FOR 1912—T. F. PECK, Commissioner of Agriculture

DISTRICT	COUNTY.	YIELD.														Cotton—acreage, per cent.	Cotton—condition, per cent.	Wheat—estimated per cent.	Garden—condition, per cent.	Oats—estimated yield.	Young Clover—con- dition, per cent.	Meadow Grasses— condition, per cent.	Millet—acreage, per cent.	Corn—acreage, per cent.	Corn—condition, per cent.	Tobacco—acreage, per cent.	Tobacco—condition, per cent.	Apples—condition, per cent.	Peaches—condition, per cent.	Grapes—condition, per cent.	Stock Pens—acreage, per cent.	Irish Potatoes—acre- age, per cent.	Irish Potatoes—con- dition, per cent.	Sweet Potatoes—acre- age, per cent.	Tomatoes—acreage, per cent.	Tomatoes—condition, per cent.	Peanuts—acreage, per cent.	Peanuts—condition, per cent.	Live Stock—condi- tion, per cent.	Alfalfa—condition, per cent.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
E Highland Rim of Mid- dle Tennessee, West- ern Subdivision.	Montgomery

H Cumberland and	Table-	Scott	80	15	70	80	90	75	...	75	80	100	80	0	...	75	75	75	...	80	...	80
		Fentress	75	...	75	80	80	70	...	...	90	80	85	70	...	...	...	...	...	...	...
		Morgan	9	15	70	80	100	95	75	...	100	100	100	90	...	100	100	95	...	90	...	
		Cumberland	12	100	12	95	90	95	85	...	90	100	100	80	...	95	95	90	...	90	...	
		Van Buren	15	25	85	90	80	95	75	...	100	85	85	95	...	95	80	75	...	75	...	
J Cumberland and	Table-	Grundy .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Claiborne	14	80	17	70	75	90	75	80	...	60	85	60	70	...	60	75	95	...	90	...
		Campbell	10	85	25	90	75	75	95	85	...	75	95	75	85	...	75	95	100	...	95	...
		Anderson	11	65	10	75	60	90	75	...	40	80	85	80	...	40	75	100	...	75	...	
		Rhea	55	80	24	95	80	70	90	100	...	90	65	95	80	...	60	100	100	...	95	...
K East Tennessee Val-	Table-	Bledsoe	11	90	25	95	80	70	75	...	60	90	85	95	...	60	75	90	...	95	...	
		Sequatchie .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Marion .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Hamilton .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sullivan	14	95	24	80	90	90	100	95	...	80	70	100	95	...	80	100	100	...	100	...
L East Tennessee Val-	Table-	Hawkins	9	90	20	100	85	80	100	...	55	95	95	85	...	75	95	95	...	85	...	
		Hancock	13	90	22	85	80	100	95	...	80	65	65	90	...	100	100	100	...	100	...	
		Washington	18	100	30	100	100	100	80	...	100	100	100	100	...	100	100	100	...	100	...	
		Hamblen	12	95	19	75	85	75	95	85	...	55	85	95	80	...	55	80	95	...	80	...
		Grainger	11	80	16	75	92	75	70	75	...	70	85	85	65	...	70	90	95	...	85	...
L East Tennessee Val-	Table-	Union	11	85	15	85	75	70	75	...	70	85	85	65	...	70	90	95	...	80	...	
		Jefferson	15	100	20	100	95	100	95	90	...	90	95	95	100	...	90	100	100	...	90	...
		Knox	16	...	30	...	65	65	60	...	40	75	100	90	...	40	85	100	...	85	...	
		Roane	13	85	18	65	65	55	75	...	55	100	100	95	...	55	90	80	...	75	...	
		Loudon	12	95	25	75	70	95	100	90	...	65	85	100	100	...	65	85	100	...	100	...
L East Tennessee Val-	Table-	McMinn	12	95	30	65	95	80	90	...	55	90	90	85	...	55	100	95	...	90	...	
		Meigs	9	90	16	55	60	85	90	75	...	45	85	100	90	...	45	90	100	...	90	...
		Bradley	80	80	20	90	80	90	80	...	20	100	60	85	...	20	90	90	...	90	...	
		James	80	70	15	85	95	70	85	75	...	50	95	95	90	...	50	95	95	...	75	...
		Johnson	14	100	30	95	90	...	95	90	...	80	65	95	100	...	80	100	100	...	95	...
L East Tennessee Val-	Table-	Carter	10	90	20	90	90	95	100	90	...	90	80	100	90	...	90	100	90	...	95	...
		Unicoi	9	90	15	85	80	...	80	60	...	70	80	100	90	...	75	...	...	...	75	...
		Greene	8	90	15	85	75	85	95	90	...	85	80	85	90	...	85	95	85	...	85	...
		Cocke	9	85	23	90	85	65	90	65	...	85	90	85	95	...	85	90	85	...	90	...
		Sevier	9	85	23	90	65	85	100	75	...	90	45	75	95	...	95	95	90	...	90	...
L East Tennessee Val-	Table-	Blount	12	85	20	85	75	60	95	75	...	85	95	85	...	85	95	95	...	95	...	
		Monroe	75	70	15	80	100	100	75	75	...	25	95	90	60	...	25	95	100	...	75	...
		Polk	80	75	9	100	22	...	80	...	...	65	85	80	95	...	65	95	100	...	90	...
		Average ..	82	71	12	85	21	84	80	80	90	76	85	80	84	85	82	85	87	88	85	88

NOTICE TO NEWSPAPER PUBLISHERS.

Several thousand copies of *Tennessee Agriculture* will be issued each month, but not enough, on account of limited appropriations for this work, to give it as wide circulation as desired. Therefore the Department of Agriculture asks the cooperation of the newspapers of the State in their liberal use of any or all the matter in the bulletins.

PUBLICATIONS OF DEPARTMENT OF AGRICULTURE.

The following publications have been issued by the Department of Agriculture and will be sent, until supply is exhausted, when request is accompanied by necessary postage:

Tennessee Agriculture. (Monthly Bulletin.) Vol. 1, No. 1. 32 pages.
Vol. 1, No. 2. 48 pages. Issued June 1, 1912. 2 cents.

Facts About Tennessee. Issued December, 1911. 52 pages. 2 cents.

Map of Tennessee. Showing Agricultural and Mineral Resources, Population and Educational Statistics, with Description of Counties. Issued 1912. 2 cents.

Handbook of Agricultural Laws of Tennessee. Issued October, 1911. 68 pages. 2 cents.

Tabulated Analyses of Commercial Fertilizers. Issued January, 1912. 50 pages. 2 cents.

Seed Bulletin. No. 1. Issued March, 1912. 18 pages. 1 cent.

Proceedings Tenth Annual Session Middle Tennessee Farmers' Institute. Dec. 5-7, 1911. 160 pages. 5 cents.

Laws and Rules and Regulations Governing Live Stock Sanitary Control Work in Tennessee. Issued April, 1912. 32 pages. 2 cents.

Relation of the County Health Officer to the State Department of Agriculture. By George R. White, M.D., D.V.S. 12 pages. 1 cent.

Concentrated Commercial Feeding Stuffs. Bulletin No. 2. May 15, 1911. 96 pages. 2 cents.

Biennial Report Tennessee Department of Agriculture. 1909-1910. 392 pages. 10 cents.

Biennial Report Tennessee Department of Agriculture. 1907-1908. 250 pages. 8 cents.

Proceedings Thirteenth Annual Convention Association of Agricultural Workers of the South, at Nashville, Dec. 11-13, 1911. 58 pages. 2 cents.

Davidson County, Tennessee. Descriptive booklet. 32 pages. 2 cents.

Rhea County, Tennessee. Descriptive Booklet. 32 pages. 2 cents.

Scott County, Tennessee. Descriptive Booklet. 32 pages. 1 cent.

Warren County, Tennessee. Descriptive Booklet. 16 pages. 1 cent.

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IN THIS ISSUE:

Managing a Two-Hundred-Acre Stock Farm.

The Best Ten Ears of Corn.

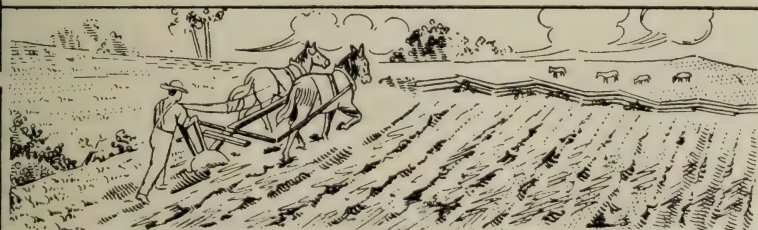
Grade Draft Mares. The State Fair.

Boys' and Girls' Clubs.

Girls' Industrial Club Work.

The Farm Woman at the Institute.

July Crop Report.



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MANAGING AND EQUIPPING A TWO-HUNDRED- ACRE STOCK FARM.

Address by Prof. Milton P. Jarnagin, College of Agriculture, Athens, Ga., Before East Tennessee Farmers' Convention and Institute, Knoxville, May 21-23.

System spells success in farming operations the same as in all other vocations. That a living with a fair margin of profit has been possible in the past without a definite system is not denied. On the other hand, it is conceded, and this fact is one of the greatest barriers in the way of systematized scientific farming. Nature stored wealth in the land so bountifully that several generations of careless, slipshod, indifferent farmers were required to reduce the fertility of the land to the point where better methods had to be adopted. The economic changes have intensified the necessity for better farming. The chief among these changes has been the increased cost of labor. When a farm hand could be had at 50 cents per day it was not so disastrous for a part of his energy to be dissipated in non-profitable labor, but at the present time all that is known in the way of cropping rotation, intelligent fertilizing and the use of modern machinery must be employed in order to multiply his earning capacity in proportion to the increased cost of his labor. It is also a significant fact that in the past ten years the value of farm work stock has increased over 200



View of University of Tennessee From Across Tennessee River.

per cent. In addition to this, with the changed market prices of feeding stuffs, it now costs the farmer more than double what it did ten years ago to feed a work team. In spite of all of the optimistic expressions of the marvelous prosperity of the age, there is a question as to whether the price of the farmer's output has increased in as great a ratio as the cost of production.

In order for stock husbandry to thrive, it presupposes an abundant food supply. If a portion of the oratory promulgated on the subject of the wonderful possibilities in the South, due to its varied topography, the multitude of crops that can be grown, the sparkling water and babbling brooks, hospitable sunshine and fresh air, had been directed along the lines of crop production, there would be fewer tight-hided, underfed, scrub animals to mar this picturesque landscape.

CROP ROTATION.

The first and most essential thing for the successful stockman to settle is the crop rotation that will best meet his needs. Each rotation is going to have to be determined by existing conditions, and it is impossible in a paper of this length to even mention the possible profitable crop combinations that can be made. The one suggested is one out of many, and it will probably fit as many conditions as any, and will serve to illustrate a systematic laying out of a farm of two hundred acres. In order to carry the greatest number of animals possible, a three-year rotation and double-cropping will prove most advantageous. A less strenuous and at the same time somewhat less profitable system will be a four-year rotation and a single-cropping system. On large farms, where labor is comparatively scarce, this is more advisable. On the other hand, the tendency is for the farms to grow smaller, and with this subdivision a smaller number of acres is required to support just as many people, and the tendency is for it to support them in greater comfort and ease.

Upon taking possession of a farm, after the buildings are provided for, the next and most important step is to see that a horse, cattle, sheep and hog fence is put completely around the boundary line of the whole tract. This should be of heavy No. 9 galvanized wire and on the most durable posts obtainable. Since horse-breeding is to be practiced on this farm, it is imperative that a barbed wire be stretched six inches above the top of the wire fence. So long as it is kept tight it is beyond danger, and it is impossible to keep horses in a pasture from shoving the wire off the post by attempting to graze over it. The farm, then, should be divided about as follows: Three thirty-acre fields for the regular three-year rotation, and these fields should also

have permanent fences that would turn any class of live stock around them. The levellest and most productive land should be selected for the three thirty-acre fields. If the land is of such a character that it will not admit of the use of at least two-horse machinery on every part of it, it had best go to pasturage. Two fields of ten acres each should be provided for silage, and a two-year rotation should be practiced on this silage land. These fields must be equipped with a hog fence. They must also be located adjacent to the silo in order to minimize the cost of putting up silage. These fields will also receive heavier applications of stable manure than any other part of the farm.

About fifty acres of permanent pasturage should be provided, though this is an arbitrary movement and will usually include all land not wooded or not suited for cultivation. At least ten acres will be required for yard, vegetable garden, orchard, poultry yard, hog lots and paddock for calves, colts, etc. On an average farm the remaining thirty acres of the two hundred will be wooded. If the advice of a competent forester is sought, the woodland will yield an annual crop in the nature of firewood, posts, etc., so that it need not be considered



General View of Experiment Station Farm.

as nonproductive land. Where the stand of timber is not good, grass may be seeded in the woodland and an appreciable amount of grazing can be gotten from it.

The suggested rotation is corn the first year; a leguminous cover crop should be seeded in it at the last cultivation. Both vetch and crimson clover should be included in it. Any of the cereals, singly or

in combination, can be added advantageously. On thin, worn land we have invariably gotten better results from the use of ten pounds of crimson clover, fifteen pounds of vetch and one bushel of rye per acre. On the better land we have been replacing the rye with oats, in which case the crop is usually cut off for hay. Wheat or barley can be used with the rye and vetch. Where the seeding is done at the last cultivation, it not only comes on earlier, affording pasturage from one to two months sooner than if the seeding is done after the corn is cut, but it gives the farmer additional time for seeding the winter cereals. The cover crop should be turned under the latter part of April. If rye is used it should be turned before it begins to head, as the rank growth of rye has a tendency to dry out the land, so that it usually breaks up cloddy if it is allowed to stand too late. For the second summer soy beans, planted after cover crop has been turned under, will be most advantageous. They should be cut for hay, seed, or hogged off the latter part of the summer, and the land will be left in ideal condition for seeding to oats or barley. The oats will be cut the following June, and cowpeas should be seeded immediately. A disc drill following the binder will put the peas in excellent condition in an average season. After the peas are cut for hay, rye should be seeded in order to hold the land together during the fall. Clover and vetch are not advocated in this cover crop, since it will be necessary to turn the land so early that they will make but little growth before the land must be prepared for corn the fourth season.

It would be well to plant ten acres of barley and twenty acres of oats after the soy beans. The reason for this is that the barley can



Some of the Plots and Buildings, Experiment Station, Knoxville.

be used more advantageously as a hog feed than the oats, and, in the second place, it will mature sufficiently early for the farmer to harvest it before the oats come on, thus enabling him to do the work with less labor.

RESULTS OF ROTATION.

The results of this rotation should give the following yields annually:

Concentrates:

Thirty acres of corn at 40 bushels per acre, 1,200 bushels.
Twenty acres of oats at 50 bushels per acre, 1,000 bushels.
Ten acres of barley at 30 bushels per acre, 300 bushels.
Ten acres of soy beans at 20 bushels per acre, 200 bushels.
Total concentrates, 2,700 bushels.

Roughage:

Ten acres of soy beans, $1\frac{1}{2}$ tons per acre, 15 tons.
Ten acres of soy stover, $1\frac{1}{2}$ tons per acre, 15 tons.
Thirty acres of pea-vine hay at 1 ton per acre, 30 tons.
Thirty acres of oats and barley straw, 1 ton per acre, 30 tons.
Thirty acres of stover at $1\frac{1}{4}$ tons per acre, $37\frac{1}{2}$ tons.
Total roughage, $107\frac{1}{2}$ tons.

Silage:

Ten tons per acre, 100 tons.

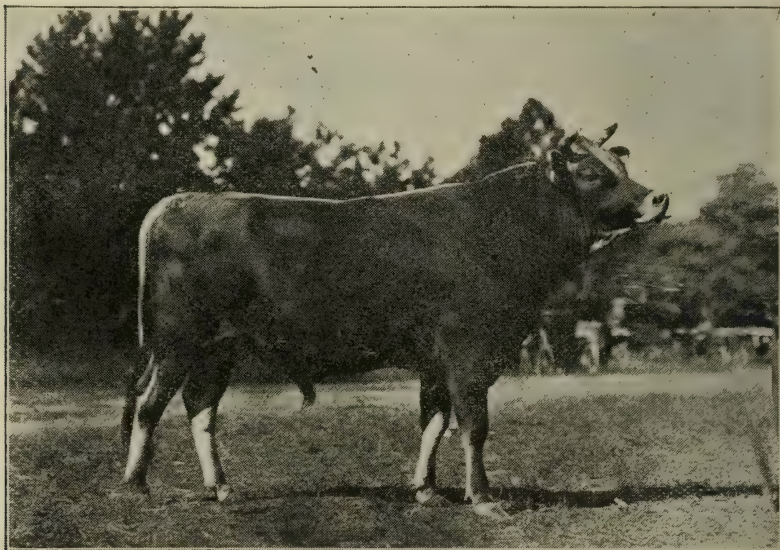
In addition to the above, there will be two of the thirty-acre fields and one of the silage fields with a cover crop on it, providing seventy acres of grazing crops for the late fall and early spring.

SYSTEM OF STOCK HUSBANDRY.

It is equally as important that a definite system of stock husbandry be adopted as a systematic crop rotation. Here again there is a great latitude of choice in the specific lands that might be intensified. No difference what line of work is undertaken, motive power is a prerequisite. Geldings or mules should not be countenanced on a stock farm. Six 1,500-pound draft mares will be required. From them should be secured each year four colts. This will be a breeding record of only 65 per cent, and this should surely be attained in as small a herd as six mares. The colts should be rushed rapidly, but retained on the farm until the spring they are four years old. They should be broken to work the fall they are two years old, so that they will be ready to do satisfactory work the entire season they are three years old, and thus the farmer has at his command, in case of necessity, ten head of work animals, with four four-year-olds to sell each spring, which,

on a conservative estimate, will bring him more than \$200 per head, making a revenue from the sale of horses annually of from \$800 to \$1,000.

The next and most important part of the farm work will be some class of cattle. It has been but a short time since the feed yards in the corn belt were filled from the great pastures of the range. This



Blue Ribbon Winner at the State Fair.

is rapidly becoming a thing of the past. At one time we contented ourselves by saying that there would be no more beef produced after the range was done away with. On the other hand, 9-cent beef the past season has turned a great deal of thought and attention toward the production of beef cattle by Eastern farmers, but 9-cent beef will not pay on \$100 land and \$1.00-per-bushel corn, with the cow paying no other revenue than the calf each year. These conditions are forcing the "double-decker," dual-purpose cow before the eyes of the public. A one-man or fifteen-cow dual purpose herd is, therefore, urged. The calves should be fed to two-year-olds, and the fifteen cows should raise twelve calves annually. In the spring before they are three they would bring the farmer \$72 per head, or \$864. In addition to this, the crop of calves, yearlings and twos will be maintained on the farm and will go a long way toward consuming the surplus roughage at the maximum market price, and at the same time getting the land into a condition where it will vastly exceed the yields indicated in rotation.

Next to the cattle, hogs will be the most important class of live stock. Too much cannot be said in urging the farmers to pay more attention to swine husbandry. The natural increase for hogs under ordinary conditions is at least 500 per cent. With intelligent management, this can be increased to 1,500 per cent. That is to say, a brood sow bearing two litters per year should raise at least fifteen pigs within the twelve months, whereas with all other classes of live stock the percentage of increase varies from 30 to 100 per cent. In addition to this preposterous rate of increase, the pig will make two pounds of gain out of the same feed which is required to produce one pound of gain in the steer. A herd of at least five big, vigorous young sows should be kept at all times. The farmer should sell from them seventy-five 250-pound pigs annually at 6 cents per pound, or a total income of \$1,125.

No diversified farm is properly stocked without at least a small flock of sheep. A two-ram flock is suggested for a farm of this acreage. Sixty good breeding ewes will produce seventy-five lambs within the year, which should sell at \$5 per head, or \$375 for the flock. The ewes should also produce in addition to this \$60 worth of wool in the year.

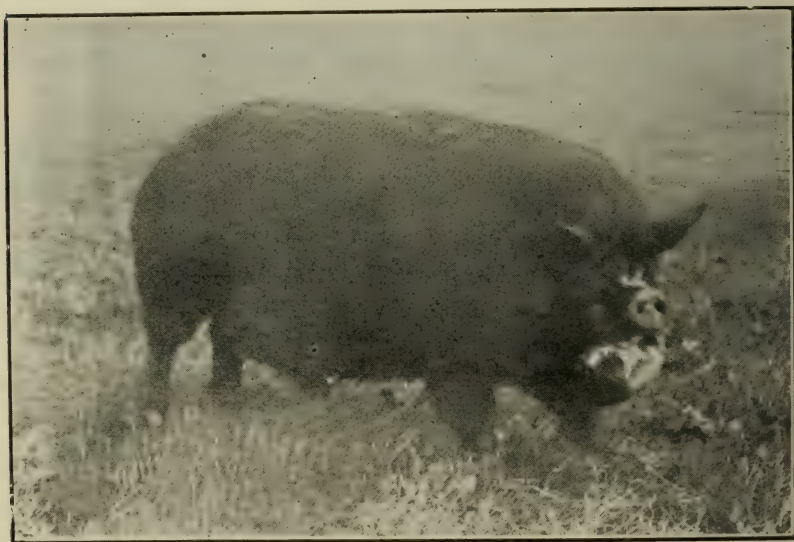
The following table gives the theoretical amounts of feeds produced by the 200-acre farm and the most logical disposition to be made of them:

	Corn, Bushels.....	Oats, Bushels.....	Barley, Bushels.....	Beans, Bushels.....	Hay, Tons....	Bean Stover ..	Straw	C. S. Meal, Tons	Corn Stover, Tons	Silage, Tons ..	Returns
Horses and Colts.....	600	700	100	...	28	3	15	...	8	...	\$ 800
Cows	191	170	...	...	7.5	2	5	5.4	7.5	54	1,260
Sows and Pigs	200	130	100	170	...	...	1	...	2	...	1,125
Feeding Cattle	100	...	25	...	5.4	2	3	1.67	5	21	864
Sheep	54.5	...	37.5	15	...	3	1	...	2.5	5	435
Calves	54.5	...	37.5	15	4.1	5	5	...	5	20	...
Totals	1,200	1,000	300	200	45	15	30	7.07	30	100	\$4,484

After this system of cropping has been followed and the amount of live stock indicated fed for a few years, yields can be vastly increased so that it will be possible to carry an additional amount of live stock, thus increasing the annual revenue. As it is, an excess of roughage is used over what is absolutely necessary. On the other hand, it is firmly believed that it is poor practice to sell anything off of the farm in the nature of a feeding stuff, and it is also contended that it is faulty practice to turn anything under the ground that a cow will eat. Much of the straw and stover indicated for the cows and

horses will be used in the nature of bedding. Where necessary, sawdust and shavings could be substituted for bedding, and during the idle season oat straw will make a satisfactory roughage for carrying the farm teams. Considerable hay straw and stover might be eliminated from the rations of the dairy cows, as ample allowance is made to provide for bedding. If this were done, enough hay could be sold to more than pay for the cotton-seed meal and other mill feeds which it may be necessary to buy.

In feeding the horses the mature teams should be made to utilize most of the corn allowed for horses. Carbohydrates are the source of muscular energy. Generally speaking, there are four feeds of oats



Big Premiums Offered at State Fair For Berkshires, Duroc Jerseys and Poland Chinas.

and ten feeds of corn to the bushel, and under prevailing market prices it is much cheaper to feed farm teams on corn than oats. At the same time the breeding mares should receive mostly oats during the hotter part of the season. The barley and oats should be used almost exclusively with suckling mares and growing colts. The amount of grain indicated for the mares and colts will be ample, since the hay will be either from soy beans or cowpeas. During the idle season the grain feed can be cut at least in half where these rich hays are used. The work teams should receive approximately one pound of grain and one and one-quarter pounds of roughage per hundred pounds live weight as a day's ration. During the idle season a con-

siderable portion of this roughage may be bright oat straw. Feed all of the hay and one-half of the grain at the night feed and one-fourth of the grain at the morning and noon feeds. It should be remembered that the further one recedes from the date of birth the more expensive will be the growth gotten on colts. It is an old saying that a colt will "fill out his measure," On the other hand, it has been amply demonstrated that it is better policy to force him to do this in four years instead of taking six to accomplish the same result, and I would, therefore, advocate the liberal feeding of foals from the very beginning.

The manger should be made of ample size and low enough for the colt to eat with its mother. In this way it will soon acquire the habit



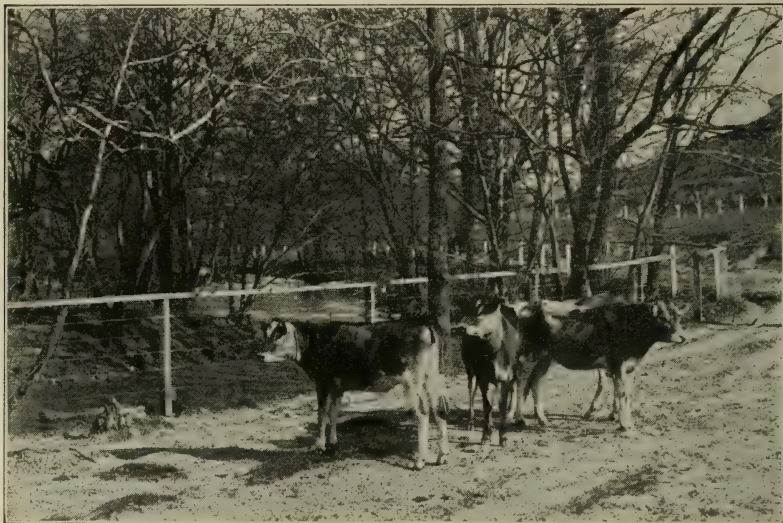
Part of Experiment Station Dairy Herd.

of eating oats. The colts should never be allowed to accompany their dams to work, and it would be better to place two colts together, as they are social creatures and dislike solitary confinement. When the mares go to the field, oats and bright hay should be placed before the colts, as this will go a long way toward keeping them contented and at the same time hasten their growth.

RATION FOR DAIRY COWS.

The ration suggested for the dairy cows is four pounds of cotton-seed meal, four pounds of corn and cob meal, and two pounds of ground oats per day. In addition to this, they should receive all of the silage they will take. With large, dual-purpose cows, fully forty pounds per head per day should be allowed, together with ten pounds of hay, and whatever straw and stover they will consume. This is an exceedingly liberal ration, and on it cows should give maximum production. As a general rule, I would suggest feeding one pound of

grain for each four pounds of milk produced, though when a cow begins to fail in milk she should be fed liberally on roughage and silage. In the calculation I have estimated the average production at 200 pounds of fat per year and supposed that 40 cents per pound could be realized for it. If a wholesale cream trade can be established, considerably more than this price can be gotten for the butter fat, and it will also save the farmer the work of making butter. A sufficient amount of the skimmed milk should be utilized for feeding



Jersey Calves, Experiment Station Farm.

the calves liberally until they are five to six months old. They should be removed from the cows by the time they are four days old and taught to drink from a bucket. A calf house, well equipped with stanchions, hayracks, water troughs, etc., should be provided. If the calves are fed warm, clean milk out of sanitary buckets, and not over-fed, there will be no losses either by death or failure to make rapid and economical gains. The calves should receive approximately one pound of milk for each ten pounds of live weight. In addition to this they should have one pound of sound grain and one pound of fine, bright hay for each 100 pounds of live weight up until they are two or three months old. After this the proportion may be slightly changed, increasing the amount of hay and grain and decreasing the amount of milk. Before weaning the calves should be taught to eat silage, as this will go a long way toward preventing a shrinkage in case the milk is taken off during the winter months. I have fed a number of so-called "calf meals" and substitutes for milk, but have

never gotten better results from any grain or combination of grains than sound shelled corn with a bit of wheat bran. We usually mix it in about the proportions of nine parts of shelled corn and one part of bran. The calves are amply able to masticate the corn thoroughly, and should begin receiving it at from twelve to fourteen days of age, and it will pay well to weigh both the grain and milk, so as to feed a uniform amount at all times. It will not be necessary to weigh the hay, but the rack should be kept full before them.

CONSIDER THE SWINE.

Since the sale of hogs will constitute one of the most important sources of revenue, too much attention cannot be paid to them. In the plan five sows have been indicated, but this probably should be increased, as it is found that an adequate food supply can be provided. It should be the expectation of the farmer to carry at least ten sows. The first litter should be farrowed in February or March and the second litter in August or September. Ample yards, pastures, farrowing pens and hog houses should be provided. There should be a separate farrowing house and yard for every sow in the herd. These yards need not be over two rods square, but they should be securely fenced with plank so that both sow and litter will be safe at all times. The sow and litter should be kept to themselves until the pigs are at least three weeks old, at which time two sows with litters about the same age can be put into one larger paddock. A serious mistake has been crowding hogs of different size and age into too large droves. It is impossible to feed them satisfactorily, and in the winter months they pile up so that a part of the pigs are overheated, with the result that colds and pneumonia are exceedingly prevalent a greater part of the winter.

No difference what quality the pasturage is, breeding and feeding hogs will thrive much better on pasture than in bare lots. The year that silage is not grown on the silage land it should be utilized for producing grazing crops for the hogs. At least ten acres of the soy beans should be marketed through them. The poorest part of the field should be hogged off each year. The pigs will not eat much but the grain, so that all of the stalks and leaves are left to turn under before planting to oats. At no time should the pigs be expected to get their entire ration from pasturage, but they should receive a grain ration of from one to three per cent of their live weight, depending on the pasturage and the object for which the pigs are being fed. It is important for the breeding herd to receive some food of a bulky character, and oats finely ground will answer well for this purpose.

FEEDING THE CATTLE.

There should be twelve feeding cattle to finish for the market each year in this system of farming. They should have been carried in such a manner that they will weigh at least 1,000 pounds when they are put on feed, and another 200 pounds should be added in ninety



Jersey Calves, Experiment Station Herd.

days' feeding. With a liberal allowance of corn silage and soy bean hay, this can be done with an average ration of nine pounds of grain per day. A satisfactory ration will be four pounds of corn and cob meal, four pounds of cotton-seed meal and one pound of ground barley. The barley will lighten up the grain feed and make it more palatable. For the first thirty days it would be well to feed approximately six pounds of grain per day, for the next thirty nine pounds, and for the last thirty twelve pounds of grain per head per day. In the beginning the ration should partake most strongly of cotton-seed meal, and at the end there should be a predominance of corn in it.

HANDLING SHEEP.

Under existing conditions there appears to be but one feasible system of handling sheep, and that is for the production of spring lambs to be gotten on to the market before the approach of hot

weather. Sixty strong two-year-old native ewes should be purchased and gotten on to the farm by the first of August. At the same time two vigorous yearling rams of any of the mutton breeds should be secured. By placing them on good feed they should come in heat and be mated by the first of September, giving the lambs by the first of February. If the ewes are not in good flesh, they should receive a small grain feed during the fall and winter. However, with strong pasturage this may not be necessary. An allowance has been made of three pounds of silage per ewe for sixty days. In an open winter this will hardly be necessary. As soon as the lambs are dropped the ewe should at once be gotten on to a green crop and every effort made to stimulate milk secretion. Creeps should be provided and the lambs fed a fattening ration consisting of corn, oats, barley, beans and a bit of bran could be added with profit. They should be made to weigh seventy-five to eighty pounds by the latter part of May. Every lamb should be sent to the market before the danger of stomach worms, which are certain to come with the approach of hot weather. Half of the less profitable breeding ewes should be disposed of and a like number of ewes purchased for the following year. Ewes should not be kept in the flock until they are too old. On the other hand, as long as they continue to produce strong twins or an exceptional individual lamb they should be retained.

In feeding the calves and yearlings the principal object should be to induce growth. An allowance of about twenty pounds of ensilage per day has been provided in the silo. A small allowance of corn,



Mammoth Yellow Soy Beans After Winter Barley.

barley and beans has also been provided. A bit of cotton-seed meal could be added to this ration with profit, since a great amount of protein is needed in cattle of this class. Both the soy bean hay and soy bean stover will pay a good profit when fed to these growing calves.

The yields per acre with all of the crops given above are conservative, and it is likewise believed that the returns indicated are equally conservative. With the high prices paid for horses and mules, horse breeding will prove a pleasant and most profitable line of farm work. A pound of gain on a horse or mule is worth from 20 to 25 cents, which is about three times what it is worth on any other class of farm animal. On the other hand, considerably more concentrates are required with them than with some other classes of stock. The necessity of carrying cattle is, therefore, at once apparent. A dual-purpose herd has been urged because it will give a farmer a constant source of income every day in the year, thus enabling him to have ample running expenses always at his command. On the other hand, more roughage will be produced than can be profitably consumed from a herd of fifteen cows. A dual-purpose herd has also been insisted upon because it will give the farmer thirty-six head of cattle always on hand with twelve high-class feeders provided for each year.

The hog herd is indicated since there will be an excess of skimmed milk to be disposed of, and there is no more profitable class of animals



Sheep in Pasture.

to feed it to than pigs. Sheep are also profitable, and they, too, will utilize much waste pasturage and will go a long way toward cleaning up and beautifying the farm.

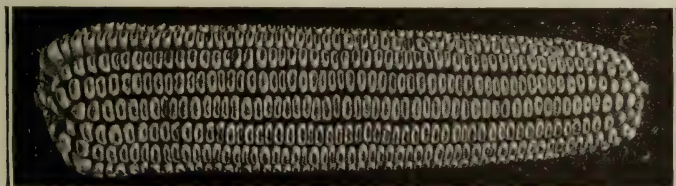
The colts are, therefore, a by-product of the farm work teams. The dairy herd constitutes a source of ready money and utilizes the waste product from feeding the horses, and also giving three valuable by-products in the nature of feeding cattle, skimmed milk for the hogs, and, most important of all, a large amount of manure to enrich the land. The feeding cattle also offer a market for the excess of roughage and go a long way toward maintaining soil fertility.

HOW TO IMPROVE AND SELECT THE BEST TEN EARS OF CORN.

Address by J. C. Pridmore to the Members of the Boys' Corn Club at East Tennessee Farmers' Convention and Institute, May 21-23.

Mr. Chairman and Members of the Club:

Those of you that come from the farms where the proper methods of live stock breeding are followed are doubtless familiar with some of the reasons why it is necessary to select with care the animals used for breeding purposes. You know that the breeder of Jersey cattle, for example, will select the very best of his sires to mate with his best cows for perpetuating his line of cattle. The careful breeder will get the best of his pure-bred stock, will use this all the time, and will not use anything but the best. As time goes by his herd improves, while he continues to mate only the best stock. "Scrub" animals have no place on the farm of the careful breeder. He knows that good milkers will give him calves that will make him good milkers, and that poor milkers will give calves that will make poor milkers.



A Fine Ear of Corn.

In other words, he knows that good produces good, and that poor produces poor. This careful breeder will not permit his stock to become crossed or mixed by allowing crosses with another type or breed of animals. He knows that such a practice is hurtful to his selected strain, and that the offspring from the crosses will be poorer than either of the parents. The even, uniform type of the Jerseys

could no longer be kept if they were bred with the Shorthorns or Herefords, for example. So for the greatest results in the line of breeding, a man must select the best animals for mating, and at the same time he must confine his animals to a particular breed and never allow them to cross.

The plant breeder is governed by the same laws that are active in animal breeding, and the same reasons that make it necessary to select the best animals in live stock breeding make it necessary to select the best ears of corn if one wishes to produce better corn.

The yield and the quality of corn produced depend to a very large extent upon the grade of seed used. It is clear from this, then, that much may be gained toward the production of a higher yield or a better quality of grain by a careful, intelligent selection of the ears that are to be planted. In fact, selection of the best grade of ears and the reproduction of the best ears from these selections year after year form the simplest method of corn improvement. This system of improvement and work toward increased production per acre is being carried on by a large number of boys of your age, not only in Tennessee, but all over the South.

As some of you are already aware, the question of corn improvement is a big one and really needs a great deal more consideration than we have ever given it. Methods of improvement have been developed to the point where they can be carried on by the boys on the farm with but little effort. Those of you who take up such work will find a large field and one with great possibilities for achievement. Should one of you add one bushel of corn to every acre of corn in your county by merely improving the yielding power of the present types of your county, it is clear that such work will add greatly to the wealth of the community in which you live. Yet it is possible to add more than one bushel per acre.

Because of the little capital necessary, the profit to be derived from the sale of seed, and because of the service that one of you would do a community in building it and in bettering its agriculture, there are attractive reasons why some of you should strive to do corn improvement work on the commercial scale.

Since it is possible for us to increase our yields of corn and at the same time improve the grain, we may well devote some time now to a consideration of the question as to how that may best be done.

Each ear of corn has an individuality—no two ears are alike in any respect. For that reason the different ears have different yielding powers. Some ears will tend to give us at the rate of a hundred bushels per acre, while others will tend to produce at the rate of

fifteen or twenty bushels per acre. That being true, one of our very first duties is to find those high yielding ears and plant only those. To do this we must in some way test the yielding power of each ear. This is best done by what we are pleased to call the ear-to-row test—that is, we plant one ear to a row and in the fall determine the yield of the different rows and compare them. It is here that the yielding power of the ears will show up. It is here, too, that the good ears may be picked out and the poor ears eliminated. Ordinarily, however, only a part of the ear is planted in each row. The remnant of the ear is reserved till the rows are compared, after which time the rem-



Boys' Corn Club Exhibit at the State Fair.

nant of the highest yielding row is planted in an isolated plot for seed. The following year we will have enough of the high yielding corn to plant the entire plantation.

In order to best carry on this work, it is well to have a knowledge of the characteristics of a good stalk and a good ear of corn. Varieties differ greatly, but, bearing in mind these varietal differences, it is best to select from those stalks which have a tendency to be stocky rather than slender, and one that is well filled with broad leaves, with the ears relatively low to the ground.

The best shape for an ear of corn to have is as nearly cylindrical

as possible. The length and the diameter vary with the variety, but, as a rule, a desirable length is about ten inches, while the diameter is about seven to seven and a half inches, measured from one-fourth to one-third the distance from butt to tip. Of course, the ear should not be too long and slender, as this one, nor too big and short, as this one. The medium size, of a given variety, as a rule, is preferable for either planting or show purposes.

The butt of the ear should be well formed, having deep, regular kernels, regularly arranged. Clean, compact butts indicate quality in the corn.

The tips of the ears ought to be well filled to the end, and, if possible, completely covered with kernels. However, a well-proportioned ear with an uncovered tip is preferable to a short, thick ear with a tip that is completely covered.

Space between the rows of kernels, as this is here shown, is undesirable. A near of corn should be solid, compact, and have as little space here as possible. Wide space, such as this in this ear, indicates poorly-shaped kernels.

A medium-sized cob bearing deep wedge-shaped kernels, as these are, is preferable to the large or the very small cobs. Such very large cobs as these bear a small per cent of corn to cob, while the small cob often allows the corn to shatter and waste.

The kernel, preferably, should be the deep wedge shape, but not too pointed. One with uniform thickness, about one and a half times as long as it is wide, is a good shape and size. The germ should be large, white and smooth, and, when broken, should appear fresh and oily, as this one.

Having in mind the leading characteristics of a good ear of corn, we are now ready to discuss the question of selecting the grain for both seed and for show purposes. In selecting for the seed plots it is always better to do this work in the field in the fall of the year, after the grain is mature. By going through the field with a basket or a sack and noting the kind of stalk on which the corn has grown, choosing only from those stalks that come up to the standard, one can soon gather enough of the best corn in the plot to plant a large area. In fact it is exceedingly important that the seed be gathered from the field, where one may observe the characteristics of the stalk as well as the ear. The characters reproduce themselves, and it is, therefore, important that only the desirable ones be planted.

After the corn has been gathered it should be stored in a manner that will permit rapid and thorough drying of the ears. By keeping the corn dry, little damage will result from freezing, while if stored

green or damp and allowed to freeze in this condition, much of the corn will fail to germinate, as freezes affect the germ of the kernels.

Those of you that intend to do exhibition work with your corn need to keep the following things in mind:

The corn must be presented to the judge in good condition, as he makes no allowance for your carelessness or negligence or ignorance. In order for the corn to get to the fair in good condition, it must be allowed to mature before being gathered. When that is done the ears should be wrapped in several thicknesses of paper to prevent the loss of a single grain. The ears should then be packed in a mouse-proof box and properly labeled before shipping.

The varieties have "standards," and these should be kept in mind in the work of selection. You should know the standards for the different varieties.

By way of summary, we should keep the following points in mind to get the best results in our efforts to improve the quality of corn and to increase the present yields:

(1) The same reasons that make it necessary for selecting good animals for breeding purposes compel us as corn growers to select and use the best strain for seed purposes. Good produces good; poor produces poor; therefore we must select the best and get rid of the bad.

(2) The yield and the quality of corn depend to a great extent upon the quality of seed planted. For this reason we must select the best for planting purposes.

(3) The field of "Corn Improvement" offers attractive advantages for those that desire to take up the work.

(4) Since each type of corn has its characteristics, it is well to know those before selecting for seed or for show purposes.

(5) In the field in the fall of the year is the proper time and place for doing the selecting. The ears should then be stored in a dry, well-ventilated place to prevent freezing while the corn is green or even damp.

(6) In shipping corn to the fairs for show purposes the exhibitor should take care to get the display to the stand in first-class condition. The judges cannot make allowances for the poor corn, broken ears, etc., and for that reason precaution must be taken on the part of those exhibiting such for critical inspection.

There will be a large increase in the number of boys contesting for the prizes offered to boys' corn clubs in this State this year. Many counties have been added to the number contesting last year.

GRADE DRAFT MARES.

Paper Read Before East Tennessee Farmers' Convention and Institute,
May 21-23, Prepared by D. S. Combs, of Hickory Valley, Tenn.

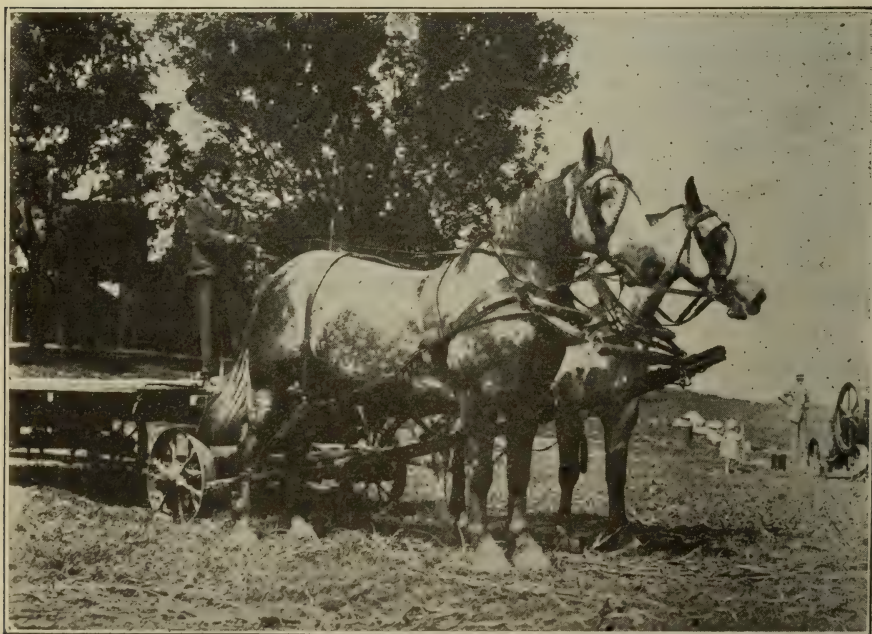
Gentlemen:

When Dr. Morgan visited Lespedeza Farm several weeks ago he saw a lot of grade draft mares at work, and he asked me to tell you how we happened to have them and whether we found them satisfactory or not.

About fifteen months ago, when I came to Hardeman County, Tennessee, to live, I found that we would require a lot more work stock if we farmed on as large a scale as had been contemplated. We had some fifty head of the biggest and best mules that could be bought on the Memphis market.

In going through the mule markets of Kansas City as well as Memphis, I found that mules that were heavy enough for the deep plowing that all of us are coming to were selling at \$250 to \$325 per head, according to age and quality, and every mule that was heavy enough and of the proper conformation to bring the top price showed unmistakable evidence of the heavy draft blood of the dam.

So I decided that, rather than buy more high-priced mules, we



Percheron Team, Experiment Station Farm.

would buy a lot of grade draft mares suitable to do general farm work, and also raise the kind of mules that would top the market.

With this in view, I took up the matter of the purchase of these mares with Mr. Robert L. Oglevie, of the Union Stock Yards, Chicago, who personally selects every horse bought by the stock yards company and is in close touch with the market at all times.

In answer to my inquiry, he wrote that he could purchase good quality grade draft mares, weighing from 1,350 to 1,600 pounds, at \$200 to \$225 per head. I wrote him to buy us twenty of them and not to sacrifice quality to keep the price down. It took ten days or two weeks for him to find this number of the kind he wanted to send us. When this bunch finally arrived at Hickory Valley I was more than pleased.

They were good colors, every one perfectly sound, ages four, five or six years, and every one had been hitched to a big wagon and the wheels locked to test their willingness to pull and soundness of wind. They cost, delivered at the farm, an average price of \$242.50. This included the commission of \$5 per head.

When they were led off the car, every loafer in the village was there to inspect them, and I did not hear a single man express his opinion who was not sure that they would be an absolute failure as work animals on the farm.

I had each animal fitted with gear in Chicago, and after they had rested twenty-four hours I paired them off and put them to work. From that day to this they have worked steadily, and I have never found a place where they were not perfectly satisfactory.

Their first work was to wagons hauling lumber, brick, cement, etc., for new buildings, and they made a trip every time the mules did, and hauled from one-fourth to one-third more than mules that cost \$600 per team.

The farmers said: "Oh, well, they may pull more on account of their weight, but they would not plow or cultivate or pull a mowing machine all day in the sun like a mule." Well, I thought that they might not stand the heat as well as the mules, so I did not have anything to say, but kept right on using them everywhere we used the mules. We put them to big plows and ran the plows as deep as we could get them. They not only stood the work, but gained on all of the lighter mules, only those of almost equal weight being able to keep up with them.

When time for cultivating corn came we bought some two-row cultivators. These were too heavy for all of the smaller mules, but the larger mules and the mares were put to them, and every time a

man with an old-fashioned cultivator and a team of ordinary mules came across a field cultivating one row, another hand with a team of mares or the largest of the mules to a two-row cultivator went across, cultivating two rows. This cut the cost of cultivating almost in half. So that you can see that we have to come to the use of draft mares or the very heaviest and most expensive mules. The mares can be bought for less money than the mules of this kind, and while the mule is a dead expense to the farmer, the mare will raise a colt worth \$75 to \$100 at weaning time, which will more than pay for her keep for the year, giving the owner her work free of cost. In five or six years the mule's value will have decreased quite a lot on account of age; while the mare's value will decrease, too, she will have paid for herself several times over.

The mare will eat a little more feed than the ordinary mule, but the difference is almost entirely made up of hay and other roughage.

The only difference we have made between the mares and mules was that we gave the mares to our most careful teamsters. Most of these mares are now with foal to a good jack. We work them up to within a few days of foaling and put them to work again when the foals are ten days or two weeks old.

I cannot see how any farmer can afford to work only mules. He should have some mares, at least, and after trying them out I believe he will gradually get rid of most of his mules and increase the number of mares.

THE STATE FAIR.

Address Delivered by W. R. Reeves, of Johnson City, Before the East Tennessee Farmers' Convention and Institute, Knoxville,
May 21-23, 1912.

Mr. President, Ladies and Gentlemen:

As you will see by referring to the program, I have been asked to talk to you for a few minutes on the subject, "The State Fair." If I were a speaker of ability, I would be very glad, indeed, to discuss this subject today, for I have always been an advocate and a promoter of those things that tend to the betterment and add to the enjoyment of the agriculturists of our State.

While every citizen of the State ought to be interested in the Fair, may I not truthfully say that there is no class of its citizens more directly benefited by attending the same than those engaged in agriculture? I wish to stress this fact for two reasons: First, because it

is a fact, therefore true; second, because from the paucity of farmers in attendance at the State Fair from East Tennessee, I am forced to believe you do not recognize it to be a fact.

Some six years ago or more a few enterprising citizens of Nashville and Davidson County instituted a Fair at Nashville, known as the State Fair. A good and creditable one was held each year, but the fact that it was run by a private corporation was an impediment to the greatest success. So during the Legislature of 1909 the county of Davidson proposed to purchase the Fair grounds, situated in the sub-



An Everyday Crowd at the State Fair.

urbs of Nashville, and turn them over to the State without any cost, on condition that the State hold annually a Fair of six days' duration. This proposition was considered by the Legislature, the generous offer was accepted, and trustees were appointed to take over the property and hold thereon each year a State Fair in fact as well as in name. The cost of this property to Davidson County was some \$150,000, and consists of a valuable tract of land and several buildings which cost large sums to erect.

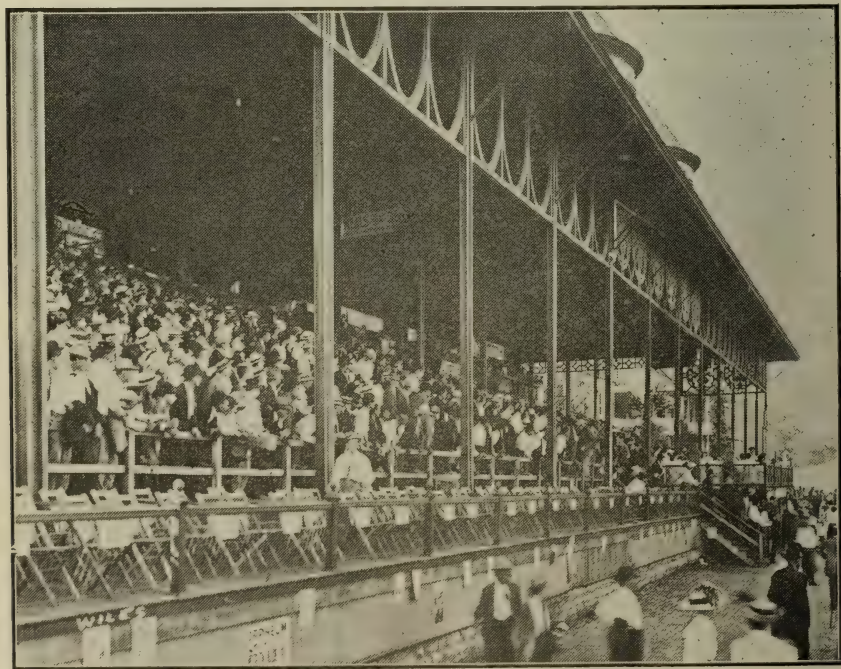
It was my privilege to attend the last two Fairs. The first was good, but the last was better, and the prospects for 1912 are very bright indeed.

It is hard to estimate the real value of the State Fair. That it is

a very important factor in State progress is attested by the fact that some thirty-four State Fairs and Interstate Expositions were held during the year 1911. So you see these States recognize the beneficial results of the Fair and contribute largely to its support. The amount of the contributions made by some of the States for the purpose of holding and maintaining Fairs I will give you later on.

The benefits to be derived from the Fair are many. It is educational and thereby a promoter of agriculture. In fact, the aim and object of the Fair and of the Agricultural Experiment Stations of the State are so closely allied that it is hard to discuss one without the other. The only difference is, the Experiment Station tells you how to do it, and the Fair comes along and says "I've gone and done it." In fact, the two in aim are so alike that we would not separate them if we could. The Fair proves what can be done by showing what has been done.

If we are interested in horses, we find here the best types, from the Shetland pony to the massive draught horse; the finest and fastest trotters and pacers in the South, and saddle horses of the most graceful carriage. Here the butcher and dairyman find their ideal strain, and the man in quest of the best breed of hogs exclaims "Eureka!"



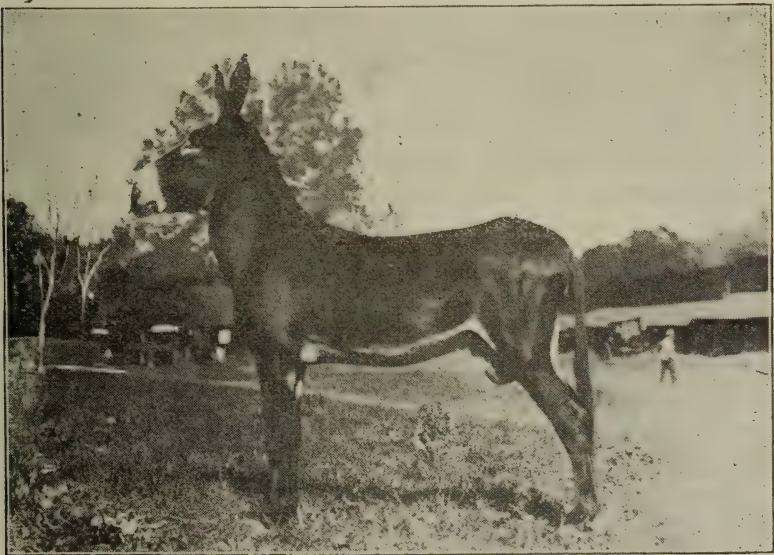
Getting Seated for Night Attractions at the State Fair.

I have not time to dwell on the poultry exhibit, but will only say there you will find every breed you are looking for, and many of which you never heard before.

Here will be found the best and finest varieties of oats, wheat, corn and grasses—the varieties producing the largest yield per acre and best adapted to our soil and climate.

If you contemplate buying any machinery for the farm and home, you will here have an opportunity to see the best, for rest assured that the man who is conscious of the inferiority of his goods will not present them for comparison with goods or machinery of more excellent merit. And you can rest assured that any machinery on exhibition at the State Fair is worthy of purchase, whether it does or does not wear the blue ribbon, for the competition is sometimes so strong that it is hard even for an expert to decide which is the most meritorious.

Right here, lest I forget, I will say that I firmly believe if the farmers generally over East Tennessee would visit the Fair in September and see the machinery for lessening the work of the household, there would in the next five years be greater progress in the economy of labor than there has been in the past twenty-five years. You will see



A Tennessee "Mocking-Bird."

how easily and cheaply the water you have been lugging for half a century can be brought from the spring, quite a distance from the house, and placed in the kitchen, the bathroom or any room in the

house, doing away with the expense of a servant if we have one, but, if not, adding years to the life of your wife. Ignorance of this possibility may partly excuse you now, but a visit to the Fair will remove all this.

In the Woman's Department building the women and children of the State have absolute control and "are monarch of all they survey." The domestic and fine arts are represented by the best talent of our State. Every phase of woman's work is separately handled in its department.

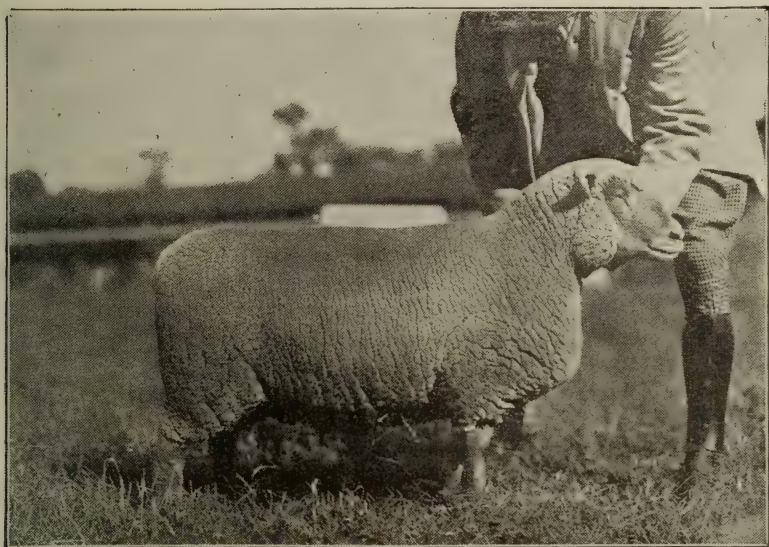
The Culinary Department, with all the new appliances for lessening the work of preparing food, is one of the special features and one of the most interesting as well. Daily lectures and demonstrations make this one of the most attractive features of the Fair to the women who want to keep pace with the times. Under the management of this department, special attention is given to children's work, the management realizing that the future of the Fair is along educational lines and is a potent factor in the development of the rising generation. Domestic science, domestic art, manual training, arts and crafts and industrial education will be handled in a scientific manner by the children, and the best and most approved methods will be in operation.

Without going further into the details of the various departments, I will ask, as a general proposition, does the State Fair pay? No better answer can be given than to say it is recognized as a beneficial institution by most of the States, and as such receives legislative support. In looking over the statistical figures giving the value of State plants, I find the following: Ohio, \$750,000.00; Illinois, \$1,106,515.00; Texas, \$1,087,500.00; Iowa, \$900,000.00; New York, \$850,000.00; Minnesota, \$736,000.00; Indiana, \$642,000.00; Michigan, \$603,000.00; Oklahoma, \$331,000.00; California, \$300,000.00; Nebraska, \$283,000.00; Wisconsin, \$250,000.00; Kentucky, \$200,000.00.

These figures represent appropriations from the various States for permanent buildings on their grounds, and are regarded as the best appropriations. They, realizing that the State Fairs are their best educational institutions, contribute liberally to their support.

Aside from the benefits derived from the Fair, as mentioned above, there is a social feature which should not be overlooked. It puts us in touch again with many who in former years were our closest friends. How happy to again clasp the hand of him whom, in our boyhood days, we had learned to love, but who, seeking his fortune in other fields, had for many years passed out of sight. Here old friendships are renewed and new ones made, and the timid young man can enjoy the smiles of the bashful maiden, and if the proper question is

asked and the right answer given, they will never forget that day at the Fair. How few of us get out of life the best there is in it for us! Let's take a few days off this fall and see how much better and younger



A Prize Winner.

we'll feel. Let the son and the daughter who have worked so faithfully all the season have a chance to see the State Fair and the capital city of our State, and they will find new pleasure in their work the remainder of the year. "All work and no play makes Jack a dull boy." This saying is as true as it is old. Let us consider the pleasures of our children.

A bureau of information will be arranged for all who attend, giving names and addresses of all hotels and private boarding houses, the rates per day, and all other information you may need. The railroads will give the lowest possible rates.

BOYS' AND GIRLS' CLUBS.

Address by O. B. Martin, United States Department of Agriculture,
Before Corn Club Section of East Tennessee Farmers' Convention and Institute, Knoxville, May 21-23, 1912.

In the office of the Farmers' Cooperative Demonstration Work of the Bureau of Plant Industry, United States Department of Agriculture, we have enrolled to date about 73,000 boys and 27,000 girls for

1912, and the lists continue to come. During the past few years several boys in these clubs have produced more than 200 bushels of corn per acre and hundreds have gone above the 100-bushel mark. These yields have been so large and have been made at such low cost per bushel that they have attracted almost world-wide attention. Hundreds of girls, too, are beginning to make profits on small gardens at the rate of from \$500 to \$1,000 per acre, besides making records on quality and variety of garden products and their preparation and preservation for food. In these circumstances it will not be amiss to consider what the purposes of these clubs are. The objects of the Boys' and Girls' Demonstration Work are as follows:

1. To make good demonstrations in farming in thousands of communities.
2. To teach the principles of agriculture and horticulture in a definite and practical manner.
3. To teach the love of plant life and the value of the soil.
4. To dignify labor and make it intelligent and effective.



Shelby County Exhibit at State Fair.

5. To give purpose and direction to youthful lives at the opportune time.
6. To teach earning, owning and accounting.

7. To help the family by having all of its members contribute to its support.
8. To show the value of rivalry and cooperation in the production and marketing of crops.
9. To vitalize school work.
10. To develop manhood and womanhood.

Thousands of farmers have been influenced by the records of the Corn Club boys to plant for a crop of from 75 to 100 bushels to the acre instead of 15 to 20, as heretofore. In hundreds of cases ten acres have been set aside and the effort made to produce 1,000 bushels of corn upon them. Many have succeeded in these efforts, and all have done better than before. It is interesting to note that as the Corn Club boys reach the age limit they have a tendency to continue the work with increased acreage and with other crops. A man came into our office a few days ago who did not live within 300 miles of any of the Corn Club boys. He works in one of the government departments, but owns a farm in his native State. He wanted to get the names, addresses and records of these boys, and he wished also to purchase some seed corn from them. His health is failing in the government service, and he proposes to return to his farm with the view of regaining his health, doing some good farming and helping his community. He said that his decision resulted from the inspiration that he got from learning about the prize winners who came to Washington.

We received a letter a few days ago from a man in Arizona who said that he was 72 years of age, but that he expected to live to see 500 bushels of corn grow on one acre, and he wanted to be the man to do it. As a starter, he wanted the records of our prize winners. We have also received letters from Canada, Brazil, Australia, New Zealand, and from other countries, asking for information, all of which indicates that the demonstrations made by these boys are helpful, not only to their communities, but to the world.

If the boys in a given county had not heard of the game of baseball and had never been taught to play it, does anyone suppose that they would learn it if each one were furnished a book and had to study it in school? The teacher might assign page after page and chapter after chapter. She might discourse learnedly on the meaning of the terms and methods of play, but these boys would never learn baseball if they were not allowed to go out on the grounds and put it into practice. If we will observe a group of boys learning to play baseball, football or any other game, we will see that at first they grasp only the simple, necessary and fundamental operations. They then get into the

game and soon get up so much interest and enthusiasm that they want to learn more about it. At this stage the book of rules becomes valuable. In the club work we have learned the value of simple names and definitions and a few fundamental rules.

We believe it is better to say Corn Club than Agricultural Club, and Canning Club than Domestic Science Club. If we will only put our-



A Blue Ribbon Winner at the State Fair.

selves in the places of the boys and girls and take their point of view, we shall see the necessity of using concrete rather than abstract terms. With this basis to start on, we can arouse an interest and impress some of the elements of agriculture and horticulture, and it is not long before the boy is ready to search the text-books, the encyclopedias, circulars, bulletins and farm papers for the more advanced knowledge. We shall do well at all times in this work to remember that agriculture is not all science. Dr. Knapp said that agriculture consisted of one-eighth science, three-eighths art and one-half business methods.

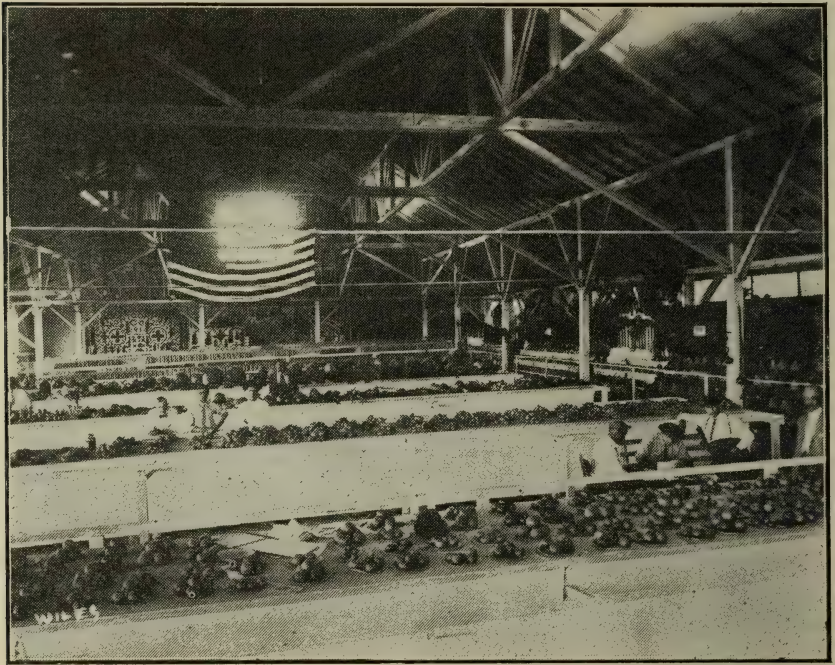
Doubtless the best way to start to develop a love of plant life is to specialize in the study of one plant. Many of our boys have devoted months of study to the corn plant and its environments. A boy in Lee County, Mississippi, went to some trouble to wash up a corn plant which was thirty-three days old. He was cautious not to break any

of the roots, and when he found that the roots had grown forty-two inches in thirty-three days he was proud to go before his club with this information. That kind of study will cause him to follow proper methods of cultivation and to learn more about other plants as he grows older. When boys detassel alternate rows of corn and thereby prevent inbreeding and get larger yields of corn, they are discovering some scientific truth that will call for more investigation. The girls who prune tomato plants and thereby get a larger fruit will take more interest in the work as a result of such discovery. The girl who finds out that tomatoes, pepper and eggplant all belong to the same family will be inspired to further study of botany, because this information will be helpful to her in utilizing the products of her garden in the kitchen. The boy who selects corn from the stalks year after year with the view of getting stocky stalks with the ears closer to the ground is getting some valuable and useful knowledge.

Naturally, he will acquire a love for that sort of thing. The boy who won the prize trip from Mississippi in 1910 was not satisfied with one-ear corn, nor did he wish a prolific which produced several small ears to the stalk, so he crossed the Boone County White with Mosby's Prolific and has now developed a good two-ear corn. He will doubtless be a benefactor to his State and to the South. In a few years he will know much more about plant life than most men know. Necessarily, in studying the plant the boy learns much about the soil. This is worth while also because if these boys can be shown the importance of saving their money and buying lands in the South while lands are as yet comparatively cheap, it will make them independent as men. A man cannot belong to the nobility in England unless he owns some land. While we do not use titles of nobility in this country, at the same time, when these boys come to manhood, they will constitute a citizenship of noble men. If they neglect this matter, prices will be so high in twenty-five years as to be almost prohibitory to the man drawing a salary or wages.

One of the good effects of the club work among Southern boys and girls has been to dispel the historic notion and break up the traditional folly that white boys must all be Bourbon gentlemen, wear kid gloves and standing collars, and leave all manual work to the negroes. These ideas were handed down from a previous civilization, when conditions materially differed, but in many communities they lingered to the detriment of the States and to the injury of the individuals. When one hundred leading boys in a county unite to work an acre apiece in corn and to study all of the phases in connection therewith, honest labor is dignified. There may be some who hold back for a while, but their

influence is soon swept away because of the success of the leaders. They have held their beliefs and practiced their customs because such were the beliefs and the customs of those who lived in the past. When



Scene in Horticultural Hall at State Fair.

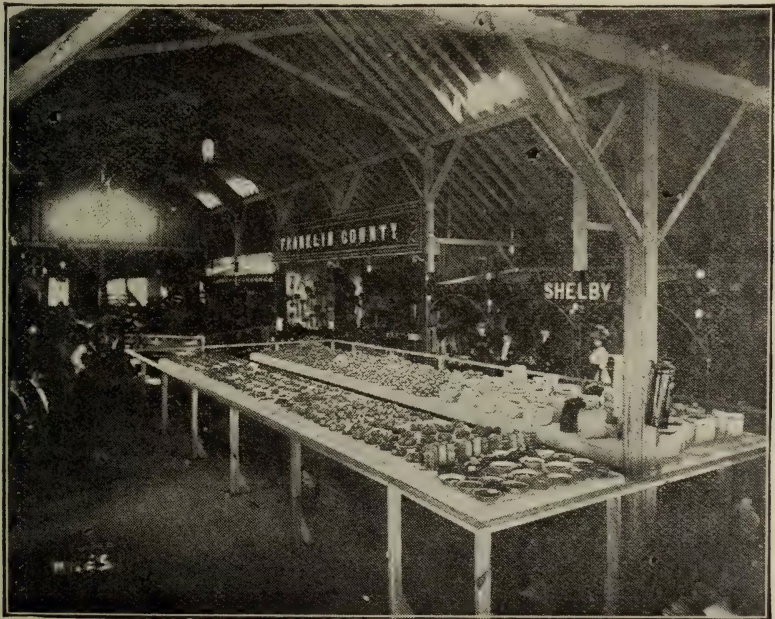
the prominent boys established new standards, they soon changed the beliefs and customs. Many people are like sheep which jump the fence because the bellwether does. Doubtless you have seen the leader jump the fence and the others follow. I saw one once jump a weak fence, knocking it down in the act of jumping. All of the rest of the flock jumped where the fence had been just the same as if it were there.

Thousands of our boys who have made good records have broken down the rotten fences which have held our people circumscribed and confined for many years. They have rendered a great service by so doing because they have dignified honest toil. It is encouraging to think that they are applying intelligence to labor and making it more effective. Not all of the mechanical talent and skill is needed in the shops and factories. Much of it can be used in the making of farm tools and implements. The application of intelligence to these problems will also bring about that diversification of crops which is neces-

sary to meet the growing demands of our population and that rotation which will maintain soil fertility.

The members of the clubs are between the ages of 10 and 18—that critical and opportune period of life when there is so much danger of drifting if good purposes are not promoted and put into execution. It is not necessary that the final decision as to one's life-work be made during this period, but it is very desirable that some worthy purpose be promoted and some desirable work be undertaken. By devoting energy, intelligence and perseverance for one year to some worthy object, a person has gained both in judgment and power to perform. It is not necessary for us to try to make farmers out of all of our boys. It would be about as foolish as the slogans "Back to the Farm!" and "Stay on the Farm!" What we want to do is to show each boy the beauty, the value and the growing possibilities in these lines, get him to demonstrate the same on one acre of ground, and leave the rest to the future.

All of the State prize winners who came to Washington in 1910, except one, said they expected to be farmers. They are now shaping their lives accordingly. The majority of those who came in 1911 are doing likewise. Dr. Knapp said the main difference between an idle saint and an idle sinner was a coat of paint and direction. These boys are getting their direction, forming purposes and getting results.



County Exhibits at the State Fair.

It is characteristic of all human beings to be proud of useful and helpful achievement. Naturally, we should expect the boys and girls to wish to make the best records in their counties and States and thus win recognition and honors. Such recognition is worth more than money or prizes, but I do not hesitate to say that I think it is all right to offer prizes to arouse interest and secure enlistment. Public-spirited leaders in the South did well last year to give these boys \$40,000 worth of prizes. After that the feeling of achievement and the honors and recognition are made influential features. Our club members like to tell that they own their crops and earn the increase. I taught in a public school once with a young lady whose father had, up to that time, furnished her all the money she needed. At the end of the first month she showed me her salary and proudly remarked: "This is the first money I ever earned. It is mine." It is really a luxury to hear the young farmers say "my acre." Our little red-headed Alabama boy, who grew 212½ bushels of corn in 1911 at the cost of 8 6-10 cents per bushel, threw his shoulders back, expanded his chest and proudly remarked: "I made as much on *my* acre, lacking one load, as father did on *his* whole farm." He had kept a strict account of all his liabilities and expenditures, and it added much to his accomplishment because of such accounting. Farmer fathers will be wiser if they appreciate such feeling on the part of their boys, not only allowing them to own their crop plats, but also take them in as partners in the business. You have seen signs and letterheads reading "Jones & Son, Merchants," or "Smith & Son, Attorneys at Law," but who ever saw "Anybody & Sons, Farmers"?

The song, "Everybody Works But Father," does not apply in many country homes, at least when it comes to that part of the work which means the support of the family. It might be changed to "Nobody Works But Father," in so far as farm work is concerned. The children are busy, it is true, but in going to school to get educated away from the farm. Mother works also, but in household drudgery. I was vrey much interested in a letter one of our boys wrote to his county paper. He has made a good profit on his acre of corn. He went into the pig business and made a good profit on that also. In his letter he gave a detailed account of his operations, summarized his bank deposits, and then gave his expenditures. In that list there was a suit of clothes, a hat, a pair of shoes, other necessities and luxuries, and he still had a good balance. He was doing his own banking, and that was good training also. Thousands of boys have grown to manhood in the country without knowledge enough to cash a check if they could

get one. Purely from a financial standpoint, however, I think the father of that boy did not lose anything by allowing his son to own and handle his money.

When a girl puts a dozen cans of fruit or vegetables in the home pantry, the family is a dollar in instead of a dollar out, and that means two dollars. The daughter should have one of the dollars. It does not take long to fill the pantry and thus get ready for the winter, with its superfluity of sausage, spareribs, backbones and other meats galore. It means better health in the Sunny South to interlard garden and orchard products with the winter diet. It is economical because thousands of bushels of such food go to waste in the summer. It is a matter of saving the surplus.

One Southern city of 20,000 population bought and sold 2,000,000 cans of fruit and vegetables in one year. The stuff was shipped 500 miles, and, of course, freight had to be paid. Here is a fine opportunity for the Girls' Club to make some money and keep it at home. They have tackled the situation. Such work meets a hearty response from people everywhere. In one State the Legislature gave a four-year scholarship to the girl making the best record, just to show that they appreciate the wisdom and the service done the State and its people.

The Canning Club members use the motto, "To Make the Best Better." The labels are so arranged that every can of fruit and vegetables can be traced back to the member who put it up. In this way each girl is put on her own responsibility, and there is a healthy rivalry to see who can follow the motto most successfully. There is not only rivalry among individuals, but among the clubs and counties. One of the boys who won a prize trip to Washington was heard to remark that if he did not get the trip next year he wanted a boy from his county to get it. His success caused four hundred boys to join the club and work to that end. In many places the club spirit is being encouraged and prizes are offered to the twenty boys who will make the best record for their county. The one thousand boys who are to attend the National Corn Exposition are to be county representatives, and this is the kind of representation which the counties may well covet.

It is a time-worn criticism to say that our schools have dealt too much in abstractions. Children have been taught things that are far away, and have remained in blissful ignorance of the most important matters near by. This is one of the reasons that people have been slow to furnish financial support in building schools and in increasing the salaries of teachers. Where teachers have cooperated cordially

in club work and have focused the searchlight of the schools upon the study of plants and the soil, some amazing results have been accomplished in increased popular support for the schools. It is comparatively an easy matter to get vital and interesting essays, compositions and histories on the crop of corn and tomatoes. It is really a delight to read these productions, especially when they are accompanied by drawings and pictures. In all cases they reveal zest and interest which cannot be said of old compositions on education, character and truth. Such work on the part of the pupils brings about an appreciation of the teacher and an increase in salary and support much more quickly than resolutions in teachers' associations or articles of protest in school journals. The effects are even more far-reaching in other lines. One teacher in this work remarked a short while ago that her matrimonial prospects had increased 1,500 per cent in one year. I take that to mean that she had had fifteen offers. You can estimate for yourself how many she had had before.

There is increased family respectability in a full pantry and a plethoric crib. There is character-building in the growing of plants. It develops observation, judgment, patience, poise and power. It is pathetic to see a boy when a drought is withering his corn. It is inspiring to see him come back with renewed determination the next year. We had ten thousand boys in Texas in 1910. Because of the continued dry weather, the corn crop was almost a failure. Did the boys give it up and fall out? Not much. They came back the next year thirteen thousand strong. The scouts may skirmish, but these boys do the real fighting.

The county superintendent in a Georgia county was very anxious to enroll a certain boy in the Corn Club. The boy failed to come out to the meeting. The superintendent wrote him a letter, but did not hear from him. The next thing he did was to get into his buggy and go to see the boy. After talking with him very frankly for a while, the boy finally told him that he did not care to join the Corn Club because he did not expect to be a farmer. He was going to town. The superintendent asked what he was going to do when he went to town. The boy dug down in his pocket and pulled out a dirty little old advertisement from an Atlanta paper which read something like this: "Automobile College; course completed in three weeks; trains boys to be expert chauffeurs; diplomas awarded." The boy, who had a good home backed by a good farm, was deliberately purposing to spend his life driving people about on the streets day or night, or to become the lackey boy of some nabob of high finance. The situation aroused the superintendent and called forth the best that was in him.

He made such a strong appeal that he changed the boy's purpose. He succeeded in getting him into the Corn Club. He was a vigorous boy, with plenty of red corpuscles. He went into the contest with zest, won some prizes and made some money. He farmed several acres the next year, and is now taking an agricultural course in order to make more out of that farm than his father ever did. Who knows but that day's work of that superintendent meant the salvation of a life? It is quite probable that if the boy had gone to the city he would have drifted into temptation, degradation and ruin. That superintendent saved a boy that day because he changed a life purpose and started the process of developing character and manhood. It is a glorious privilege to have a hand in such work.

THE GIRLS' INDUSTRIAL CLUB WORK.

Address by Miss Virginia P. Moore Before Home-Making Section,
East Tennessee Farmers' Convention and Institute,
Knoxville, May 21-23, 1912.

On the women depend to a greater degree than we realize the nature and extent of the movement for a better country life, wholly aside from their personal influence as members of families. Farming is a copartnership business. It is a partnership between a man and a woman. There is no other great series of occupations in which such a copartnership is so essential to success.

As the strength of a chain is determined by its weakest link, so will the progress of rural civilization be determined by the weakness of the farm as an economic unit, or by the weakness of the home as a domestic and social unit.

A woman cannot expect to have much influence in furthering the affairs of her rural community until she is master of her own problem, and her problem is the home-making part of the farm.

Much talk and consideration have been given to the reorganization of the farming business; so also is time and thought and interest being awakened in the reorganization of the home-making side. But the movement is in its infancy. Through the Boys' Corn Clubs and other clubs the boy has been and is being trained for the farm, but what about the girl? The Canning and Poultry Clubs and Tomato Clubs (or garden clubs) have come into the lives of girls in the past two years, and are directing her interests along the home-making side of her life, thus awakening a greater love for the country and country life.

It is as necessary to the woman as to the man that her mind be open to the facts, phenomena and objects that are everywhere about her, as the winds and weather, the plants and birds, the fields, streams and woods. It is one of the best resources in life to be able to distinguish the songs and voices of the common fields, and it should be a part of the education of every person to have this respite.

The making of a garden is much more than the growing of tomatoes, strawberries and roses. It is the experience in the out-of-doors, the contact with realities, the personal joy of seeing things germinate and grow and produce their kind.

If country women and girls are to develop a concise sense of responsibility in country life betterment, education facilities must be offered them. The schools must recognize home-making subjects equally with other subjects. What becomes a part of the school eventually becomes a part of the life of the people of the region. Rapid strides during the past four years have been made in our own State—Tennessee—to introduce domestic science in the rural high schools, but the elementary school, where tendencies for life are being formed, has little for the training of the everyday need, but, on the other hand, the school and the home are far separated.

Through the United States Department of Agriculture a campaign is being waged for the organization of girls' industrial clubs in eight Southern States. This is the one hope of the rural school in correlating home-making with the regular course of study.

The motto of the Girls' Industrial Club work is "To Make the Best Better." The emblem is the open book, the tomato, the four-leaf clover, and in each leaf of the clover is an H, signifying equal training of hand, heart, head and health of every child. The demands for a redirected education in our rural and common schools is being felt throughout the United States. Everywhere the questions are being asked: What shall we teach? How shall we teach it? Can it be done without the loss of the "three r's"? Teach all the subjects of farm and home life that can be studied in connection with the daily school studies and as substitutes for many of the non-essentials now existing in the average common school. Substitute practical farm and kitchen arithmetic for the more complicated forms of cube root, compound proportion, etc. Instead of the great amount of technical physiology, such as scientific names of bones, nerves and muscles, which is forgotten "after examination," substitute some home economic subjects, including ventilation, food values, laws of home and personal hygiene, balanced rations, composition of foods as related to human needs, and many other subjects of equal impor-

tance and related to the elementary science of living. So can language, history and geography be vitalized by relating them to man and his economic welfare. By correlation work, as suggested by the booklet work, no time will be lost to the "three r's."

Mr. Bradford Knapp tells us there are up to date 25,000 members of the Girls' Canning and Poultry Clubs, who, on their one-tenth-acre plots, will follow the United States department instructions. The objects of the girls' demonstration work are:

1. To stimulate interest and wholesome cooperation among members of the family in the home.
2. To provide some means by which the girls may earn money at home and at the same time get the education and viewpoint necessary for the ideal farm life.
3. To encourage rural families to provide purer and better food at a lower cost, and to utilize the surplus and otherwise waste products of the garden and orchard.
4. To furnish earnest teachers a plan for aiding their pupils and helping their communities.

The county is the proper unit for organization of clubs, and it is important to have a county organizer who can personally look after the girls' work, who can arrange meetings for the girls and give personal instruction.

It has been found profitable to subdivide the county organization by districts or schools. Each club should adopt the following general regulations and by-laws:

1. Girls joining the clubs must be between ten and eighteen years of age on January 1 of any given year. Special classes may be organized for older girls.
2. No girl shall be eligible to receive a prize unless she becomes a member of the club and plants a garden containing one-tenth of an acre.
3. The members of the clubs must agree to study the instructions of the United States Department of Agriculture.
4. Each girl must plan her own crop and do her own work. It will be permissible to hire heavy work done, but the time must be charged.
5. In estimating profits the following uniform prices must be used: One dollar for rent of land; 10 cents for each hour worked; \$2 a ton for stable manure; and actual cost for commercial fertilizer and other things purchased or furnished.

The garden and products must be carefully measured, and two

disinterested witnesses must attest the report submitted at the close of the season.

The awards of prizes and honors shall be based on the fresh and canned products of the garden according to the following schedule:

(1) Quality, 20 per cent. (2) Quantity, 20 per cent. (3) Variety, 20 per cent. (4) Profit, 20 per cent. (5) History, 20 per cent.

Circular letters, instructions and seed are sent to each member from the department at Washington.

Following are some of the records made by members of the Girls' Tomato Clubs in other States:

Katie Gunther, Samaria, S. C., one-tenth of an acre of tomatoes:

Cost of yield in canning	\$35.33
Canned products	770 No. 3 cans
Net cost per can	4c
Purchased home canner	\$6.25
Net profit for season	\$78.37
Sold some fresh tomatoes	\$47.90
Profit on acre basis	\$783.70

Salena Smith, Brook Haven, Miss., one-tenth of an acre of tomatoes:

Cost of yield and canning	\$33.07
Canned products	1,008 No. 3 cans
Net cost per acre	\$33.03
Net profit for season	\$77.73
Profit on acre basis	\$777.30

An organization like this, with the United States Department of Agriculture back of it, working in harmony with the State Departments of Agriculture and Education and other agencies, is destined to be the greatest movement in the world for the girls of our rural homes.

May the spirit of that great apostle, Dr. Seaman A. Knapp, live in the hearts of each of us and encourage us to do our part in helping to train the girl and the woman for efficiency and to develop her outlook on life.

THE FARM WOMAN AT THE INSTITUTE.

Address by Mrs. James A. Reagan, of Sweetwater, Before Home-Making Section of East Tennessee Farmers' Convention,
Knoxville, Tenn., May 21-23, 1912.

Someone has said that three things are necessary to making a speech—something to say, say it, sit down. It is not my intention

to deliver a formal address this afternoon, but I have something in my heart I want to say to you, so I will say it and—sit down.

First, I must tell you how very glad I am to see you here, to see so many new faces, and I extend to you every one a most cordial greeting. I want you to feel perfectly free, to feel that this is *our* meeting, and I want you to ask questions, take part in the discussions, take your pencil and paper and jot down notes.

You women who have ever started a fire know that you cannot do much with one small piece of kindling, but take several pieces, strike a match; first one piece catches, then another and another, and the first thing you know you have a good blaze and your fire is burning. One person couldn't make a meeting, but we must catch the fire of enthusiasm from each other.

There may be some here who have not attended a woman's institute before, so we will consider the need and object of this work for farm women. Agriculture is America's largest single industry. One-third of our toilers are farmers, and one-half of our people live under rural conditions. The farmer produces what we eat, and, as everybody eats, you will readily see how important an individual the farmer is. In order for him to perform his work properly, his body must be healthy, his mind clear and his heart happy. Who is to start him off in the morning well fed and properly cared for? The little woman in the home. So you see that the farmer's wife is also an important factor, for she is the "power behind the throne." I have been a country house-mother for over twenty years, and I have long had the country women on my heart. I am loath to admit it, but it is true that the average farm woman lives a hard life, one full of toil and drudgery. Her life is necessarily a complex one, for her interests are varied and she needs to know so many, oh, so many things. Consider for a moment some of the things a country housewife must needs know about—the house, the yard, the garden, the baby, the dairy, the laundry, the sausage and lard making, the poultry, the sewing, etc. These are but grand divisions, and there are many subdivisions, I can assure you.

Dr. Oliver Wendell Holmes says: "An overworked woman is a sad sight—sadder, a great deal, than an overworked man, because she is so much more fertile in capacities of suffering." Don't you imagine it is right hard to do all that and always keep sweet? Of course, we must provide food, clothing and shelter for our dear ones, but ought we not to have a little time for culture of heart and brain? The Woman's Institute is the only organization on earth, so far as I know, for the benefit of country women particularly. It reaches a

class which is not reached in any other way. It is comparatively new work, but it is a real issue, and will go on till its effects shall be felt in a new order of things.

Our branch of the East Tennessee Farmers' Convention has not been as well attended as it should be, but, as I said, the work is new and very little has been done throughout the South. We are learning, however. We learned in school, when we were young, the three R's, and now we are going to learn in our Home-Making Section what Mrs. Ellen H. Richards calls the fourth R—Right living. If we only could get the women of East Tennessee to attend these meetings, they would learn the use of labor-saving devices, the orderly classification of work, scientific and sanitary methods which are so rapidly replacing old-fashioned ones, and many other things that would lighten the burden of the tired woman on the farm. We could then become wise counsellors as wives, stronger, better mothers, and more useful citizens—a result worth working for, no one will deny. But, ladies, it takes money to run things—institutes as well as homes. So far no appropriation has ever been granted to help the Women's Institutes, though help has been given the men. Would it not be an unjust parent who would educate the sons and neglect the daughters? This is, indeed, an educational movement—I might say a missionary movement, for it is a high mission to make people healthier, better and happier. It is said that healthy, happy people seldom make criminals.

Let us get the ears of our legislators—who, after all, are just folks—and see if they will not lend their aid in extending our work. In Canada this work has proven of such great value that the government is extending and enlarging it constantly. In Ontario, if the women of a county band themselves into a local institute, the government grants money to defray expenses. Michigan has a Teachers' and Patrons' Association. In Illinois there is a Domestic Science Association, with the women meeting out in every farming district. The University of Wisconsin has a short course for women called the Housekeepers' Conference. Cornell University has a farmers' wives' reading course for women who cannot leave home to attend college.

There are others I might mention, but this is enough to show what is being done in some places. Our men are as kind and as generous as those of other States. They have never realized the need. When a man finds his home is made brighter, himself and the children happier, his wife less burdened, he will be wanting to do something for us. Let us appeal to their reason and with patience and

sweetness of spirit accomplish this result. In our work we will always set our standard high and strive for high mental and moral growth.

If the home influence is ever so good and pure the time will come when the children must come in contact with outside influences. Oh, haven't you held your little ones close to you and wished with all your heart you could make the world better before they had to go out into it? I have. We must work hand in hand with the teachers to improve our schools; they need it, especially our rural schools. All of our children should be in school. Some parents do not appreciate the value of an education; therefore we need a compulsory school law. Some counties have it now, but it should be a State law. Then I want every one of you to insist upon a first-class medical inspector for all of our schools. Many physical defects can be corrected in children that cannot be cured in adults. Some almost degenerate children are said to be so from physical causes, and there are many backward children because of deafness and defective eyesight. Let us plead for the children and give them as good a start in life as possible.

We will correct and cure disease wherever possible, but the voice of today says: Prevent disease. There are three diseases widespread and of extreme destructiveness in this State—hookworm, typhoid fever and tuberculosis. Do you know that one person in every seven dies from tuberculosis in our State? Yet science teaches us that they are largely preventable. Learn how to prevent; teach your less fortunate neighbors. Jacob Riis says we need neighbors more than anything else in the world. Intelligence owes a duty to ignorance, and to ourselves "hold alien nothing human." There are cases of blindness in infants that can be traced back to immoral habits of the father; there are operations that women have had to bear from the same cause. Let us, oh, let us guard and protect our daughters, even if we do as the mothers in a town in Illinois. They called themselves the "Mothers' Protective Association," and investigated the standing and character of suitors. With an interurban association, the mothers of one city get information from another regarding any young man who calls upon their daughters. Some think there is no white slave traffic in the South. I wish it were unknown here, but it is not. I have found through my church work that among fallen women are some who came fresh and innocent from the country, some seeking work, others seeking pleasure. Young people in the country long for pleasure and recreation as much as others, perhaps more, for in many cases their lives are full of toil. The towns have their moving

picture shows, amusement parks, skating rinks, etc. No wonder the country often seems bare and lonely to the boys and girls! In old times we had quiltings, spelling bees, corn shuckings, singing schools, but they have disappeared, and what has come to take their place? Nothing that I know of.

Life must be made interesting and enjoyable for the young. Open your homes to them; oh, hold them close to your heart! Have neighborhood clubs, band yourselves together, and get a moving picture machine yourselves. Open your schoolhouses, your churches, if need be, but make life happy for them. You know the old saying—man made the town, but God made the country. We need them in the country; we need their help and interest in the Women's Institutes. Insist that sex hygiene be taught the girls by a wise, good woman. They can be taught to care for their bodies, so that when they are wives they can bear healthy children, and they will not feed their babies on kraut, cheese and hard-boiled eggs, as I saw one woman do.

It is said that 30 per cent of the children born on the farm die before they are 21 years of age. Let us help prevent this appalling waste of human life. You may be ever so clean yourself, but is your family safe when there is typhoid fever or tuberculosis in the family of the farm hand on your place? That mother does not know how to be cautious. *You* ladies can scarcely realize the ignorance upon such matters. I met a young couple on the train not long since, rather nice looking young people. They chanced to remark that they were returning from the funeral of a friend who had left a family of small children. "Poor thing!" I exclaimed; "what was the trouble?" "Well," the young man replied, "the doctor said it was this here new disease, tuberculosis."

I wish we could have a Woman's Institute in every county in East Tennessee. My heart is full of the need; I see it on every side. I must not discourage you at the very outset, but talk of what you hear here. We must educate, educate, educate.

We have much to be thankful for in East Tennessee. Our climate is not severe; our soil is fertile; our people are kind, sensible and capable. There are many resources to give us advantages over other sections. You remember what Isham G. Harris said of East Tennessee—the country for which God Almighty had done more and man less than any country on earth. I think that cannot be truthfully said of us now, but have we measured up to our opportunities?

One cultured, well-ordered home in every community will be the little leaven that after a while will leaven the whole.

Let us do our best, keep our faces toward the right, then may we run and not be weary, walk and faint not.

FIRST AID TO THE HOUSEWIFE.

Address by Catherine A. Mulligan Before the East Tennessee Farmers' Convention and Institute, Knoxville, May 21-23, 1912.

The subject of home economics has made great progress in our schools and colleges, but the housekeeper, already busy with the practical side of home-making, has little time to study the problems that are so close at hand.

And yet if she could, as she goes about the daily routine, think out for herself a more convenient arrangement of her floor space, especially of the "dinner route," a better placing of the kitchen furniture so as to save steps, how much it would help! She could save time; she could conserve her strength; she would then have some time for rest and refreshment. If, besides these things, she would invest in labor-saving devices, she will find that it pays, not only in dollars and cents, but in that which cannot be measured in terms of money. The measure of life is found in happiness and satisfaction, and the basis of this is health, vitality and power.

The invention and adoption of labor-saving devices are a part of the great movement toward the conservation of our national resources, and our women should be figuring on the cost of these inventions, not as a short cut to indolence and whist parties, but on the basis of healthful, life-giving results.

The steps that have to be taken from dining-room to kitchen, and to cellar or smokehouse or dairy are many, and if these places can be connected by any means—by the cutting of a door between kitchen and dining-room; by the putting in of a dumb waiter to connect the kitchen with the cellar below; by the putting of a table on wheels to carry dishes in one trip from sink to table or china closet—these all save the housekeeper time and strength.

A woman who does her own house work should keep the supplies and utensils used constantly in the kitchen right at hand. Her only need for a pantry is to store canned fruits or supplies seldom needed.

The kitchen should be moderately large in the South, with the chimney on the outside wall. The stove should be placed where there is a good light, but all the air from the windows should not have to pass over it and become heated before getting into the room.

The most often used utensils should be kept on shelves level and within easy reach of the worker, and the supplies must be at hand.

No business is a success unless someone makes plans before undertaking it, and the cooperation and help of every member of the firm must be enlisted.

Begin the night before to save time. Yes, I know you are tired, but you can think what is needed for the three meals, what extra work ought to demand first attention on the next morning. Have the children put the living-room to rights, and have school books and hats ready for school, while you prepare the kitchen for the morning meal. Someone can set the table, so that everything will be in readiness.

In the morning each child ought to straighten his own room, leaving the bed to air, while the mother is getting breakfast.

For two hours after breakfast the milk, the preparations for dinner, the gathering of vegetables and the special cleaning of the house will keep one busy. Then rest an hour, mending in a comfortable chair until time to finish the noon meal.

Dishwashing should be the work of the children—not punishment, but education. Before we began to talk of the high cost of living the children had to do the chores, and the chores educated the children. They made them think. In colonial days every gentleman could harness a horse and every lady could bake a loaf. The chores took the children out of the dependent class and made them partners in the domestic business—cooperative, self-reliant. Sometimes the children disliked the tasks. They then learned one of life's greatest lessons—the lesson of doing what we don't like to do.

Having planned one day's work, fit in the many extras and plan the week.

Monday is no day to wash. It is said that our Pilgrim mothers arrived on land on Monday, and after their long voyage felt obliged to do the washing, and they continued to celebrate each succeeding Monday their safe arrival in this "cleanliness-is-next-to-godliness" manner; but there are too many other extras for Monday. The house needs straightening after Sunday; the soiled clothes are to be collected, the food supply replenished, so Tuesday will be the best wash day.

A good washing machine will cost \$7.50; with a wringer, \$10.00. There are 300 kinds on the market. The common type is the rotary—tub shape, larger at the bottom than the top.

The bottom and sides are corrugated. A shaft in the center has a four-pronged attachment very like a milk stool. This shaft churns the clothes around and forces the water through. *Boy* or *man* power can be attached to this machine. A water motor costing \$12.00 can be used if you have running water in the house.

Iron on Wednesday. Have, though, as many articles of house-furnishing and wearing apparel of material that does not require

ironing. Turkish towels, both large and small, can be hung on the line in shape and folded when dry. Knitted underwear and stockings can be treated in the same way.

Every garment, curtains and bedcovers can be made of crepon and seersucker. It is pulled into shape and requires no ironing. Sheets of outing or plain cotton blankets without borders can be used in winter for sheets on children's beds, and are very comfortable and wash easily.

A gasoline iron, such as you will see in use in the laboratory, can be kept hot at small expense, and without loss of time in heating, or steps taken in going from stove to ironing table. It can be used on the piazza, where one can keep as cool as it is possible to be when near an iron.

I know very little about mangles for ironing flat work, but they can be had to be used either hot or cold.

I had almost forgotten to mention the many uses paper can be put to in the home.

Rolls of towels at 35 cents can be used like a blotter to wipe hands and face, to wipe soiled vessels before washing them, to absorb fat when drawing food fried in deep fat, to dry windows. Paper napkins find hundreds of uses. Paper combs, drinking cups and soap cloths all come put up in 10-cent packages for use when traveling or at school.

Now let's attack the house cleaning. A friend of mine, in writing about this meeting, begged me to impress on you ladies that the first aid to house cleaning is to avoid accumulating *things*. Just be brave, look calmly at the contents of each room, and burn up, give away or sell what is not absolutely necessary for use or for beauty. This will do away with many a dust catcher. The attic's musty smell comes down to you laden with germs of disease from past generations, and all the accumulation of years could be put where it can do some good or else destroyed.

Now, floors are one of the problems to be solved. A perfect one of hardwood is expensive, and is dangerous where there are young children or old people. The ordinary pine floor can be painted or finished with a hard finish like liquid granite or elastica.

Matting is the best covering for bedrooms and for dining-room where there are children. It can be wiped up with a damp mop and taken up and hosed off when stretched on the grass, and put down again as clean as new. Linoleum, heavy, plain brown or tan, inlaid, is the best covering for a kitchen. It will last a lifetime and is easily

kept clean. Do away with lace curtains. Have them of crepe or of plain scrim, and have as few draperies as possible. Walls should be finished so that a coat of alabastine or some water mixture can be put on whenever needed. These washes are mixed in such a way that they do not crumble as does the old-fashioned whitewash, though for cleanliness lime is unsurpassed.

Use shades of tan for all the walls. This makes the best background for pictures, goes well with the furnishings, of whatever color, and is restful to live with. Other colors fade and must be selected with care. Red walls are an abomination.

Now, for removing dust and dirt, the vacuum cleaner, run by power in the city, is the greatest invention of these years. Several hand machines are on the market, some requiring two people to operate them and some can be managed alone. Here again *boy power* is fine.

The "sweeper-vac" runs like a carpet sweeper. The revolving of the wheel operates the bellows, and it takes up a surprising amount of dirt. This machine costs \$9.50. Clubs and societies in many places buy a cleaner of the more expensive type and rent it by the day, making it pay for itself and raise funds for other purposes.

Dustless dusters and mops aid in the cleaning. Soft cloth, moistened with turpentine or kerosene, may be hung to dry and used with almost as good results. A bucket with automatic wringer attached helps in using a mop for piazzas and uncovered floors.

Now, the kitchen utensils, most of all, are labor-saving only when they save more time and labor than their cleaning and care require. A many-division egg poacher, or a very complicated meat grinder, or mayonnaise mixer are more trouble than help, but steamers, fireless cookers, alcohol or kerosene stoves and many other things ought to be in every kitchen.

Steamers are of several kinds. The double boiler, with perforations in the inner vessel, enables one to steam fruit or vegetables in their own juices, and they can be served in the inner vessel in which they were cooked. This is the greatest labor-saving scheme. The brown ware, that can be both cooking and serving ware, is cheap and attractive.

The steamers in several divisions can be used over one burner of the gas or oil stove with a saving of fuel and time, for the food does not have to be watched as when cooked in separate vessels.

Fruit can be put directly into the jars and cooked in a steamer. Fruit cake and brown bread both cook well in it, and the fruit swells and is better flavored than in baked cake.

The fireless cooker from the first hay box to the modern electric cooker with the automatic heat regulator attached are all helpful.

The medium-priced fireless, with two divisions, costs \$10.00 to \$15.00. The food is prepared with less water than would be required when cooked on the stove. The radiators are heated and shut in the division with the food, and left till ready to eat. Bread may be baked, tough meats cooked, and all but strong-smelling vegetables are better for the close cooking.

But I must return to the many uses of paper. The paper bag can be used instead of a pan in cooking on the rack in the stove every kind and condition of food. The heat must be slow, and a rack must be used under the bag to move it from the stove.

Paper plates with circles of oiled paper to protect them from the food, or oiled paper put on the finest china, can be used when hard pressed for time, and on Sunday serve the ice cream in cones to save washing so many dishes. Soon attractive waterproof plates will be on sale when the demand is great enough.

Now, we say, what does all this cost?

One woman figured that a servant costs \$3.00 per week wages and \$2.00 more for board. That amounts to \$260.00 a year. This woman wanted most of all a furnace, a vacuum cleaner, a washing machine, a kitchen cabinet and a dumbwaiter from kitchen to cellar; also a cupboard built in the wall to cover the ironing board hinged onto the wall, so she divided her money as follows:

Furnace, \$106.00; cleaner, \$25.00; washing machine, \$12.00; lumber and work, \$22.50; fireless cooker, \$12.00; cabinet, \$25.00. Total, \$202.50.

She is investigating motors for sewing machine, washing machine, ice cream freezer, vacuum cleaner, meat grinder, bread mixer, churn, grater and silver polisher; also plants for a water system, a bathroom outfit, and, best of all, this woman feels a peculiar satisfaction in her investment and joy in her home-making.

THE MORAL TRAINING OF CHILDREN.

Address by Miss Bessie Love Before the East Tennessee Farmers' Convention and Institute, Home-Making Section,

Knoxville, May 21-23, 1912.

Who are responsible for the moral training of the child? First of all, the parents. The child, until six years of age, is wholly and distinctly the parents' charge. Outside influences have little opportunity

to invade the home for good or bad, save as they come invited or unexcluded by the parents. A man said that his boy was ruined by four years in a certain university. Six whole years that boy was in the home; ten school years that boy slept and ate in the home; fourteen vacations that boy was in the home; yet the father believes the four years the boy was in the university ruined him. Not a teacher, not a psychologist, will agree wholly with that father. The home influences were responsible for the morals of the boy, at least for five-sixths of his morals.

While the parents' responsibility for the training of the child's moral nature is first, the teacher's responsibility is next. Some parents, however, give little thought to the greatness of the teacher's power in training the child. A rich farmer in East Tennessee last year paid \$600 for new blood to keep up his fine stock, while his children went to a six-months' school where the teacher's salary was \$240. That teacher was responsible for the moral as well as the mental and physical training of the children, yet the teacher is not considered by the parents of as much value as the horse that pulls the children to school. Without investigation or interest, the father and mother place their children under just anyone who has passed the county examination or who will teach for what a farm hand can make in a year. Sometimes these teachers are tobacco fiends, sometimes secretly they tipple, and often they are persons of weak moral character, while, from the nature of the responsibility of the position, the child should be under the strongest and best ideal possible. Fortunately, the majority of the underpaid, overworked teachers in this section of the country are persons who strive nobly to meet the burdens of their position.

Who are responsible for the moral training of the children? The parents, the teachers, all humanity. If a man can so live that he in no way comes in the range of any child's vision, he may not be directly responsible for the moral welfare of any child. Not many people, however, are so isolated, so desolate that they are cut off entirely from the child's joyous world. There may be no child in the home, none on the farm, none in the business house where the man spends the hours of toil, none in the social centers where he seeks enjoyment; yet a man or a woman so situated is responsible for the morals of the children passed on the highway.

Truly, the major factors in the child's training are the home and the school; nevertheless, the street is the factor of influence. The passer-by who wins a smile from a wayside toddler, the person who carries a sunny morning face with the love of his fellows beaming

through, the strong heart who helps the little child with his burden on the dusty road, is meeting an inevitable obligation to uplift all mankind.

Since they, by nature of authority, experience or environment, are responsible for the moral training of the young, parents, teachers and all adults should use cooperative measures to advance the best known methods in this training.

The parents' part in cooperative moral training is the largest and most important of all, because parents are the first instructors in the principles of morals. Six plastic years are given to the father and mother to mould or to mar. Untrammelled golden opportunity of the parents! Like Manoah of old, how fervently they should pray, "Teach us what we shall do unto the child."

This first instruction does not mean taxing the little one's brain with long maxims, texts and catechisms, although these have an important place in the child's education. Such an important place have they that long ago the great law-giver, after setting forth a matchless code of laws for the conduct of all ages, said: "Thou shalt teach them diligently unto thy children, and shalt talk of them when thou sittest in thine house, and when thou walkest by the way, and when thou liest down, and when thou risest up." The parents who follow that command will endow their children with a wealth of moral coin acceptable and necessary to all conditions of life.

There should be a comradeship between parents and children that will preclude the child from learning wrong ideals of life through servants or friends. Because Tom and Sallie do not discuss all questions that come up with father and mother, those parents need not think they will get pure ideas from the hired man, the negro cook, or any other companion whom they may question. So much has been published on this subject by experienced writers that any parent who needs instruction in the matter can easily find it. Above all, however, the parents should guard the child and protect him from companionship that may give him wrong ideas of purity. The parents should be truthful with the child on all issues, but, above all, truthful with regard to life itself.

The parents should cooperate with the church and the Sunday school in a practical way to enlighten the child's understanding of the Scriptures. What the parent is able to get his children *to do* during the week is more important than what the Sunday school teacher is able to get them to think on the Sabbath morning. The child should be given tasks that will encourage and develop right acting. For instance, the lesson is on the Good Samaritan; give the child an oppor-

tunity to do something for a sick person, encourage him to carry some flowers or some fruit to an invalid, and he will be nearer realizing and making a personal application of the meaning of the parable. Again, the child hears the story of a faithful little sister watching her brother by the river side, and with a sister's childish love and wisdom obtaining that mother shall nurse her own baby, though he be the ward of the princess. That listening child, fascinated by the beautiful story, takes new pride in watching over and caring for her baby brother.

Endless examples might be cited to prove the value of such cooperation in the home for enforcing and engrafting spiritual truth upon the young child by means of a story applied in work.

As another method of moral training, parents can probably find none to surpass that of interesting young children in work and in right habits by utilizing their playful imaginations. This will succeed often when scolding, sermonizing and admonishing fail. Let Tom play that the chips he is picking up are rabbits and he will enjoy caging them in the woodbox. Let Mary imagine the stack of greasy plates is a whole family of little girls to be made ready for a picnic in the china press, and she will take more pride in making them clean and shiny. Let Jim Bob play soldier and learn to meet the hurts and accidents of life as a true soldier should—without flinching.

If parents coordinate the child's work with play, they will win the child to love work. If they coordinate the child's work and play with his moral training, they will find it an easier task to make him a good boy. Some of this moral training must be given in careful selection of the games children play and of the toys with which they play. Many boys have an incipient desire for murder just because they have played at killing their comrades with toy pistols and guns. Parental watchfulness and guardianship can keep such harmful toys from the child and can prevent his knowing about them. It is not best to leave children to their own devices in selecting games. From some playmate they may learn secretly language and habits that will undermine their purity and destroy the work of years of careful training.

In their play children are learning the business of life. Recall your own experiences. Did you not begin a life lesson of unselfishness and altruism when you divided a rosy-cheeked apple or a spicy cookie with your comrade of the fence corner playhouse?

Did you not, in admonishing your dollies to be truthful and good, teach yourself some lessons of patience and obedience to elders?

But memorizing Scriptures, applying them in work and play at home cannot entirely educate the child's moral nature. Home influ-

ences as the child grows older must be coordinated with and reinforced by the activities of the school. If parents can learn to clasp hands with the teacher, and, together with the teacher, lead the little child along an upward path, at the years of discretion he will be found in the right way of living. Too long have parents allowed a petty, narrow partiality, which they call mother love and father love, to prejudice them against giving another person authority over their children. One writer, however, has defined mother love as the instinct that makes a woman hasten to hush the cries of the baby. So does a similar instinct move the old bachelor drummer when awakened by a baby's cries on the Pullman.

The child must go to school and father and mother must learn to submit his mental and moral training to the teacher as they would submit his body to the expert physician during sickness. Parents must cooperate with the teachers patiently and quietly. If they see anything to criticise in the teacher, they had best talk of it to the teacher, face to face, kindly, but not in the presence of the child.

The child at home, alone or with a few playmates, does not always show the characteristics that he does at school in a large class of children. The teacher realizes this. Years of child study, practice in child training with fifty or sixty pupils year by year, until hundreds have passed through her guiding hands, make her a skillful judge of the child's moral deficiencies and personal characteristics. Yet thousands of cocksure, ignorant parents, who have probably not studied more than three or four children, and those from the partial standpoint of parental love, dare by slighting criticism to destroy a splendid, experienced teacher's influence over their children.

Mothers should organize and join associations formed as auxiliaries to the uplift of school life. They should investigate painstakingly, not only school grounds and buildings, but also moral conditions. Many teachers have been made heartsick and gray-headed over the trashy literature, the indecent anecdotes and the letters that are passed secretly from child to child. Yet often when they speak to parents of these surreptitious pitfalls in school life, the anxious teachers meet with incredulity and indifference on the part of the parents. Mothers' associations should investigate the literature hidden in the desks of their children and of their neighbors' children. "It is a crime to teach a child to read and not to furnish him good books to read."

Nearly all schools have rules that children should not loiter along the streets before and after school hours. The State supports the teachers' authority in these laws. Yet how few parents cooperate with the teachers in seeing that the child does not stop for a moving picture

show in town or for an hour's idleness in someone's barn listening to and having his mind saturated with vile yarns while Bill oils the harness. How many parents are indifferent while their boys in after-school hours acquire the tobacco habit, the liquor habit and other foul habits of profanity toward their whole moral being? Is it not startling and horrible that statistics show that one-third of the drunkards acquire the habit by sixteen and one-half by twenty-one years of age?

What can parents and teachers do to be vigilant over these idle hours of the children? If the boy or girl wishes associates, it is a natural desire. The parents and teachers should see to it that there is an open playground, clean games, honest rulings.

If the boys want to run in a gang, without any visible paternal interference, the father can find some strong, enthusiastic leader to organize the Boy Scouts, and through that organization can see to it that his boy has wholesome fun along with manly training.

The child needs comradeship; his racial instinct demands it. If you live in a town where there is no place for the children to play, work for a supervised playground. See to it that the child has genuine fun there, not grown-up games. If you live in the country, where the wide stretch of fields, woods and sky give your child breathing and running room, do not forget that the child needs some comrades with whom to enjoy nature. A dear little town boy, when asked how he liked the country, replied wistfully: "There is plenty of room to play, and you can see as far as you look; but give me somebody to play with."

It would not be very much trouble for country mothers to plan a series of home picnics for the children in the neighborhood. They might limit the dinner to sandwiches, and plan games for the boys and girls. There might be hoeing bees, apple parings or corn shuckings in case work has to be done. The comradeship of such meetings might help to solve the problem of keeping the boy on the farm while giving him the satisfaction of herding with a few of his kind.

Any work, any play, any organization that keeps boys and girls healthfully active will help to make them morally pure. The Boys' Corn Clubs and the Girls' Tomato Clubs that are being developed and fostered by the Department of Agriculture will benefit the country parents in their endeavor to make the boys and girls good. Parents should encourage and cooperate with the teachers who are organizing these clubs.

In Italy a wonderful woman, Maria Montessori, in experimenting with defective children in her schools, has learned much that will benefit the normal child. While her work has been with the very

young children, some of the methods are applicable to children of all ages. Her whole method of discipline is based upon utilizing every activity of the child's nature. In Montessori's schools for both defective and normal children the hours are longer than in this country. It is marvelous, almost incredible, that, though the children spend a whole day in these schools, they do not have to be disciplined by punishment. Montessori's motto is "The first dawning of real discipline comes through work."

Children three and a half years old, four, and on up, learn to set the table for the noonday meal, to serve their companions, to wash dishes, and to perform many other useful acts in addition to learning to read, to write, to sing and to go through kindergarten games and gymnastics. These children are so happy in their tasks that their physical vigor is increased, and through work they begin a spiritual awakening.

Parents would do well to study Montessori's methods to use in the homes and to recommend to the teachers. They should teach these useful lessons in the home, and not wait for the boys and girls to learn manual training, domestic science and agriculture in the schools. When their boys and girls are learning these useful arts in the schools, however, the parents should cooperate with the teachers by seeing that boys and girls practice at home what they learn at school. A pan of dishwater for the girls and a plot of ground in which to dig for the boys are sometimes their moral salvation.

Too much cannot be said to parents and teachers in favor of interesting the child in useful tasks. This argument, however, is not in favor of long hours of labor for children in ill-ventilated factories and mines, but for the various tasks of home and field that are especially interesting to the child. In the plan for the redemption of humanity work has an important place.

"This is the gospel of labor,
Ring it, ye bells of the kirk,
The Lord of love came down from above
To dwell with men who work.

"This is the rose he planted,
Here in the thorn-cursed soil,
Heaven is blessed with perfect rest,
But the blessing of earth is toil."

Parents and teachers must work together for the moral training of children, but all humanity must cooperate with them.

What is the place of the outsider, the passer-by, in the moral

training of the child? It is a world-wide place. Just two weeks ago, in an Oklahoma town, a passer-by found two light-hearted, careless girls who had slipped away from an Eastern home to search for the wonderful cowboy sweetheart they had seen vividly represented in the moving picture shows. That passer-by saved them.

Studying the life of Jane Addams will convince the most skeptical that the outsider can do much for the uplift of other people's children.

So closely cemented in the moral upbuilding of the child are home, school, church and outside influences that it is difficult to grade them according to their relative importance. The great-hearted outsiders are building orphanages, laying off playgrounds, amending child labor laws, founding schools for useful trades, supervising the amusements of children, enforcing compulsory education, building libraries, interesting the child in and binding him to religion while he is a child, and carrying on a thousand other activities to help parents and teachers improve and conserve child life. It is a wonderful age when men are coming to see the importance of the little child. The great-hearted, whether he be parent, teacher or passer-by, is he who feels and lives Phillips Brooks' creed: "He who helps a child helps humanity with a distinctness and an immediateness which no other help given to human creatures in any other stage of their human life can possibly give again." When he lives this creed in vigilant activity, he meets with forward breast and uplifted face the greatest responsibility of humanity—the responsibility of right moral training of the young.

Let us pledge the women of our State, the great old Volunteer State, to go on record, as did our pioneer ancestors, that they will carry the banner of progress, if need be, through wilderness, over rocky hills and mountains, down perilous streams, but always forward until they shall win greater battles for child advancement than any battles those grand men fought on Tennessee's blood-consecrated soil for political reasons. Let the women cooperate in fighting battles for the children of our State and Nation—battles that will win for them the child's inalienable right to good birth, to physical protection, to compulsory education, to the joys of childhood, to clothes, food and play, but, above all, to his right to enter into that kingdom whose "enter in" means "Become as a little child."

THE AGRICULTURAL SPECIAL.

The Agricultural Special Train, which is touring the State of Tennessee under the direction of Commissioner T. F. Peck, of the Department of Agriculture, in cooperation with the various railroads

of the State, had a most successful run during the month of July. Leaving Nashville July 1, over the Louisville & Nashville Railroad, it made all principal points on that road in Middle and West Tennessee, and was delivered to the Illinois Central lines at Memphis on Monday, July 8. That road operated the train twice across the State and delivered it to the Southern Railway at Grand Junction on Monday, July 15. The Southern operated the train for one day in West Tennessee, and delivered it to the Mobile & Ohio at Corinth, Miss., on Tuesday, July 16, which road operated the train for three days, delivering it to the Nashville, Chattanooga & St. Louis at Union City, on Friday, July 19.

The balance of the month was consumed in the operation of the train over the lines of this road, and it was delivered to the Southern Railway at Chattanooga, on Thursday, Aug. 1. This road will carry the train over its lines in East Tennessee, and the train will then be carried over the lines of the Louisville & Nashville in East Tennessee, the Queen & Crescent, and the itinerary will be completed when the train goes over the lines of the Tennessee Central in Middle Tennessee, the last stop being at Doddsville, on Aug. 23.

During the twenty-seven days on which the train was run during the month of July, it is conservatively estimated that the exhibits were seen by at least 135,000 people, an average of 5,000 per day.

FAIR DATES FOR 1912.

Following are the dates allotted for fairs to be held in this State for the year 1912, with the names of the Secretaries of the various associations:

Postoffice.	County.	Dates.	Secretary.
Alexandria	Dekalb	Sept 5-7	Rob Roy.
Celina	Clay	Oct. 3-5	W. L. Brown.
Clarksville	Montgomery	Aug. 15-17	W. W. Riggins.
Cleveland	Bradley	Oct 15-18	B. D. Moore
Coal Creek	Anderson	Aug. 28-30	W. L. Wilson.
Concord	Knox	Sept. 10-13	F. H. Borling.
Cooneville	Putnam	Aug. 29-31	A. P. Barnes.
Deer Lodge	Morgan	Sept. 24-27	M. M. Goad.
Dresden	Weakley	Oct. 9-12	W. R McWhirter.
Dyersburg	Dyer	Sept. 10-14	W. C. Paris.
Fayetteville	Lincoln	Aug. 14-16	W. C. Mocres.
Gallatin	Sumner	Aug. 22-24	W. Y. Allen.
Humboldt	Gibson	Sept. 18-21	C. W. Rooks.
Jackson	Madison	Sept. 24-28	W. F. Barry.
Kingston	Roane	Sept 3-6	T. E. Goodwin.
LaFayette	Macon	Aug. 15-17	M. H. Allen.

FAIR DATES FOR 1912.

Postoffice	County	Dates	Secretary
Lewisburg	Marshall	Aug. 6-9	C. C. Wallace.
Memphis	Shelby	Sept. 23-28	F. D. Fuller.
Clarksville	Montgomery	Aug. 15-17	W. W. Riggins.
Morristown	Hamblen	Sept. 25-27	R. F. Taylor.
Murfreesboro ...	Rutherford	July 30-Aug. 2...	B. B. Kerr.
NASHVILLE			
(State Fair) ..	Davidson	Sept. 16-21	J. W. Russwurm.
Newport	Cocke	Sept. 18-20	J. F. Stanberry.
Hickman	Centreville	Oct. 1-3	R. H. Clagett.
Rhea Springs ...	Rhea	Oct. 2-7	H. B. Payne.
Rome	Smith	Sept. 12-14	A. T. Williams.
Shelbyville	Bedford	Sept. 5-7	W. E. Gant.
Sweetwater	Monroe	Oct. 1-4	Jas R. Love.
Selmer	McNairy	Oct. 15-18	W. K. Abernathy.
Tullahoma	Coffee	Aug. 28-30	John W. Harton.
Winchester	Franklin	Aug. 20-23	T. B. Anderton.

SUMMARY OF JULY CROP REPORT.

T. F. Peck, Commissioner, Department of Agriculture,
Nashville, Tenn., August 1, 1912.

The fair weather over the State during the past ten days or two weeks has served to put the farmers of Tennessee into a more hopeful frame of mind than they were during the continued wet weather of the first weeks of July. While many of the crops are late, the indications are that the yield will be good. Corn was damaged by the rains, and cotton is late, and in many places there is a bad stand, and the crop will not equal that of last year.

Wheat was damaged in the shock, but the reports indicate that the yield of oats will exceed that of last year by nearly a third.

Unfavorable reports regarding the tobacco crop have been received from some sections of the dark tobacco district, while the prospects are reported very good in other sections, and it seems that the production this year will be an average crop. Some sections of Stewart, Dickson and Montgomery report a bad prospect for the crop of tobacco.

The condition of stock peas is reported good, and the production

will exceed that of 1911. Millet will also show a greater production than last year, and the percentage of the hay crop saved will be one-fifth or one-fourth more than for 1911.

The potato crop for this year will be larger than for last year, and the increased yield will be especially noted in Irish potatoes.

In the market gardening sections of the State tomatoes are reported in good condition, with prospects for an increased production.

Clover is shown to be in good condition, with nearly a full crop, and the reports also indicate that in many counties the farmers are getting good stands of alfalfa.

In the peanut belt indications are that the yield will be considerably increased over last year, and with good prices for the product, will be a considerable source of revenue to the farmers of that section.

Pastures are reported good in nearly all sections of the State, and live stock are reported in better condition than last year. In a few sections of the State there is some complaint of hog cholera, but with the new serum for that scourge, and with the indications that farmers are looking for and eradicating the sources of infection, this trouble will become less and less, and will finally disappear from the State.

Lambs are being shipped from some of the counties where this industry is prominent, and are bringing good prices.

Below is the summary, for comparison, of the reports of this Department for the years 1911 and 1912:

	1911	1912
	Per Cent	Per Cent
Cotton, condition	80	69
Wheat, estimated yield (bushels per acre)	12	11
Oats, estimated yield (bushels per acre)	17	22
Millet, condition	66	84
Corn, condition	82	81
Tobacco, condition	60	85
Stock Peas, condition	77	87
Irish Potatoes, condition	36	85
Sweet Potatoes, condition	73	81
Sorghum, condition	77	80
Tomatoes, condition	61	87
Peanuts, condition	52	76
Clover, condition	54	86
Live Stock, condition	83	88
Hay Crop, saved	50	61
Alfalfa, condition	53	85

JULY CROP REPORT FOR 1912—T. F. PECK, Commissioner of Agriculture

DISTRICT	COUNTY.	Cotton—condition, per cent.	Wheat—estimated yield.	Oats—estimated yield.	Millet—condition, per cent.	Corn—condition, per cent.	Tobacco—condition, per cent.	Stock Peas—condition, per cent.	Irish Potatoes—con- dition, per cent.	Sweet Potatoes—con- dition, per cent.	Sorghum—condition, per cent.	Tomatoes—condition, per cent.	Peanuts—condition, per cent.	Clover—condition, per cent.	Live Stock—condi- tion, per cent.	Hay Crop—saved.	Alfalfa—condition, per cent.
A Alluvial Plain of the Mississippi River and Plateau Slope of West Tennessee.	Lake	58	...	...	90	62	...	80	65	88	...	78	...	68	83	50	73
	Obion	70	9	20	100	78	95	90	93	85	70	78	...	70	95	73	93
	Dyer	65	8	25	...	60	...	90	70	90	93	75	...	90	83	40	...
	Lauderdale	78	9	23	100	87	...	97	78	85	90	95	90	92	92	42	...
	Tipton	72	18	25	...	75	100	86	100	90	91	90	...	75	84	51	100
B Brown Loam Table- lands, Middle Counties of West Tennessee.	Shelby	52	...	30	90	88	...	95	70	90	100	90	...	90	90	...	100
	Weakley	63	11	18	...	78	80	73	82	73	82	78	85	75	82	68	...
	Gibson	70	6	10	85	80	...	85	80	85	80	85	...	75	85	20	85
	Crockett	55	9	18	38	63	...	63	68	73	63	63	...	70	75	30	...
	Madison	70	14	23	100	88	100	95	100	100	95	100	...	75	80	90	100
C Summit Region of Watershed, West Ten- nessee.	Haywood	62	12	18	...	72	...	78	58	60	63	...	...	75	80	60	...
	Hardeman	68	15	13	90	85	...	73	83	67	65	88	100	100	87	53	100
	Fayette	62	8	14	...	77	...	83	90	87	88	93	...	...	80	10	...
	Henry	70	13	18	90	85	83	83	85	83	78	83	75	75	80	63	...
	Carroll	50	7	7	75	63	50	65	65	90	78	88	75	83	93	78	...
D Valley of Tennessee River, West and Mid- dle Tennessee.	Henderson	60	10	15	...	73	...	80	...	35	...	...	...	65	75	25	100
	Chester	70	10	17	100	73	...	83	95	90	78	83	100	73	97	52	...
	McNairy	64	10	15	90	78	...	86	73	75	70	75	33	80	83	53	90
	Stewart .....	...	9	18	90	88	68	95	90	93	90	...	...	95	90	95	...
	Benton	59	10	18	80	85	80	75	94	73	80	78	63	60	85	58	...
	Houston .....	...	13	19	85	81	92	88	86	90	78	89	85	82	97	47	92
	Humphreys .....	...	11	33	83	83	90	73	72	65	73	53	68	72	70	72	50
	Decatur	50	...	...	80	50	55	85	70	65	...	...	65	...	80	50	...
	Perry	73	10	24	85	67	...	87	80	63	77	78	67	87	93	95	...
	Hardin	62	...	...	75	78	60	80	73	90	77	100	...	70	75	...	50

H Cumberland land.	Table-	Scott																001	001	06	001	001
		9	11	90	89	100	...	...	...	08	001	001	001	001	001	001	001					
	Fentress	...	...	...	...	...	...	...	...	59	001	06	...	...	...	...	...	...	...	56	001	001
	Morgan	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Cumberland	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Van Buren	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Grundy	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Montgomery	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Robertson	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Cheatham	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Dickson	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Hickman	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Lewis	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Wayne	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Lawrence	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Macon	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Clay	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Pickett	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Overton	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Jackson	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Putnam	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	DeKalb	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	White	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Warren	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Coffee	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Franklin	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Sumner	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Trousdale	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Smith	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Davidson	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Wilson	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Williamson	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Rutherford	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Cannon	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Maury	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Marshall	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Bedford	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Giles	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Lincoln	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06
	Moore	...	...	...	...	...	...	...	...	...	001	06	...	...	...	...	...	...	...	56	001	06

F Highland Rim of Middle Tennessee, Eastern Subdivision.

G Central Basin.

DISTRICT

COUNTY.

J

Cumberland
land and Valley
of Bledsoe,
East Tennessee.Alfalfa—condition,
per cent.Hay Crop—saved,
per cent.Live Stock—condi-
tion, per cent.Clover—condition,
per cent.Peanuts—condition,
per cent.Tomatoes—condition,
per cent.Sorghum—condition,
per cent.Sweet Potatoes—con-
dition, per cent.Irish Potatoes—con-
dition, per cent.Stock Peas—condition,
per cent.Tobacco—condition,
per cent.Corn—condition,
per cent.Millet—condition,
per cent.

Oats—estimated yield.

Wheat—estimated
yield.Cotton—condition,
per cent.

K

East Tennessee Val-
ley.

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Valley of East Ten-
nessee and Unaka Re-
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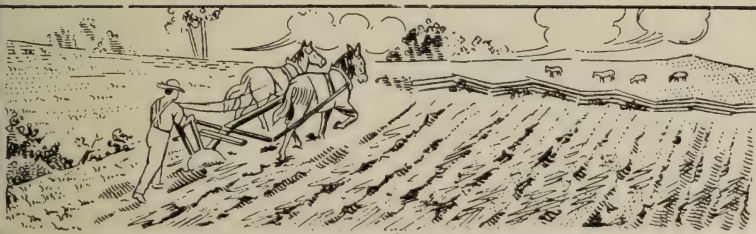
The Agricultural Special.

The Woman of the Farm Home.

Home Conveniences.

The Japanese Persimmon.

August Crop Report.



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PERCY H. BARBEE, Feed and Seed Inspector for West Tennessee.
G. M. BENTLEY, State Entomologist and Plant Pathologist.
HOYT N. HARDEMAN, Stenographer.

BUREAU OF IMMIGRATION. STATE OF TENNESSEE.

THOMAS F. PECK, Commissioner.
E. O. LUTHER, Assistant Commissioner for East Tennessee.
JESSE TOMLINSON, Assistant Commissioner for Middle Tennessee.
R. T. DEBERRY, Assistant Commissioner for West Tennessee.

Assistant Commissioners for State-at-large:

F. M. RUNNELS, Bristol.	HERVEY WHITFIELD, Clarksville.
A. C. FLOYD, Memphis.	JOHNSON BRANSFORD, Nashville.
JOHN R. WILLIAMS, Knoxville.	R. A. BARRY, Greenfield.
JESSE S. COTTRELL, Knoxville.	J. J. B. JOHNSONIUS, Paris.
RUTLEDGE SMITH, Cookeville.	GEN. JOHN T. WILDER, Monterey.

BOARD OF TRUSTEES TENNESSEE STATE FAIR.

T. F. PECK, Chairman, Nashville.	F. G. BUFORD, Buntyn.
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W. R. REEVES, Johnson City.	EMMETT COOPER, Nashville.
J. H. McDOWELL, Buntyn.	J. S. HENDERSON, Kenton.

SUCCESSFUL TOUR OF AGRICULTURAL SPECIAL.

The Agricultural Special train, which has been touring the State since July 1, under the direction of the Department of Agriculture of Tennessee, in cooperation with the railroads of the State, closed its itinerary on Friday, August 23, at Doddsville, a station on the Tennessee Central Railroad in Cheatham County.

The train was on the road forty-seven running days, and counting Sundays was fifty-four days out of Nashville, from which point it started on its long trip on Monday morning, July 1, over the Louisville & Nashville Railroad, making the first stop at Madison, a station eight miles out from Nashville.

During the itinerary of the train stops were made at the following places:

Louisville & Nashville Railroad—Madison, Gallatin, Portland, Hartsville Junction, Hartsville, Franklin, Ewells, Columbia, Lynnville,



Farmers Hearing Address From Special.

Culleoka, Pulaski, Mt. Pleasant, Summertown, Ethridge, Lavina, Lawrenceburg, Loretto, Goodlettsville, Greenbrier, Springfield, Cedar Hill, Adams, Clarksville, Cumberland City, Erin, Danville, Big Sandy, Tennessee Ridge, Paris, Trezevant, Bells, Brownsville, Stanton, Bartlett, LaFollette, Jacksboro, Dossett, Byington, Amherst, Armona, Maryville, Louisville, Friendsville, Greenback, Vonore, Madisonville, Englewood, Tellico Plains, Etowah, Benton and Oliver Springs.

Illinois Central Railroad—Woodstock, Millington, Atoka, Covington, Ripley, Halls, Fowlkes, Dyersburg, Newbern, Trimble, Obion,

Polk, Troy, Rives, Gibbs, McConnell, Martin, Sharon, Greenfield, Milan, Medina, Toone, Bolivar, Hickory Valley and Grand Junction.

Southern Railway—Collierville, Moscow, Saulsbury, Middleton, Ooltewah Junction, Cleveland, Charleston, Athens, Sweetwater, Loudon, Concord, Bearden, Straw Plains, Jefferson City, Morristown, Bulls Gap, Greenville, Chuckley, Jonesboro, Johnson City, Bluff City, Elizabethton, Butler, Mountain City, Embreeville, Limestone, Mohawk, Rogersville, White Pine, Leadvale, Newport, Del Rio, Rutledge, Corryton, Tazewell, Cumberland Gap, Maloneyville, Powell, Clinton and Vasper.

Mobile & Ohio Railroad—Ramer, Selmer, McNairy, Henderson, Pinson, Humboldt, Fruitland, Trenton, Dyer, Rutherford, Kenton and Union City.

Nashville, Chattanooga & St. Louis Railway—Dresden, McKenzie, Huntingdon, Lexington, Huron, Jackson, Whiteville, Somerville, Parsons, Mercer, Westport, Buena Vista, Camden, Waverly, McEwen, Centreville, Hohenwald, Nunnely, Dickson, Kingston Springs, Smyrna, Murfreesboro, Wartrace, Shelbyville, Tullahoma, Manchester, McMinnville, Sparta, Estill Springs, Decherd, Winchester, Huntland, Lewisburg, Petersburg, Fayetteville, Flora, Cowan, South Pittsburg, Jasper, Sequatchie, Whitwell, Dunlap, Lees and Pikeville.

Queen & Crescent Route—Lancing, Annadel, Sunbright, Rugby Road, Helenwood, Oneida, Rockwood, Spring City, Evensville, Dayton, Sale Creek, Hixon, and Harriman.

Tennessee Central Railroad—Harriman, Crab Orchard, Crossville, Monterey, Algood, Cookeville, Baxter, Bloomington, Buffalo Valley, Lancaster, Carthage, Hickman, Watertown, Lebanon, Ashland City and Doddsville.

Besides these points, several other stops were made on petition of the citizens. During the forty-seven running days of the train it is conservatively estimated that 250,000 people saw the exhibits and heard the lectures of the experts and demonstrators who were with the train.

The train was under the immediate direction of Commissioner T. F. Peck, of the Department of Agriculture, who had the active assistance and cooperation of representatives of the seven railroads over which the train was operated. The train consisted of nine cars, including a sleeper, dining car, Arms palace stock car, flat car for stock demonstration, domestic science car, health and education car, dairy car, soils and crop car, and entomology car. This equipment was furnished free by the railroads, each of which furnished the engine and train crew to operate the train over its lines.

Following is the personnel of the party with the train at different times during its journey over the State: T. F. Peck, Commissioner of Agriculture; Jesse Tomlinson, Assistant Commissioner of Agriculture for Middle Tennessee; R. T. DeBerry, Assistant Commissioner of Agriculture for West Tennessee; Dr. G. R. White, State Live Stock Inspector; Dr. H. D. Cogdell, Assistant State Live Stock Inspector; A. L. Garrison, Chief Feed and Seed Inspector; P. H. Barbee, Feed and Seed Inspector for West Tennessee; Noble C. White, Feed and Seed Inspector for Middle Tennessee; J. W. Wynn, Feed and Seed Inspector for East Tennessee; H. N. Hardeman, stenographer, Department of Agriculture; Prof. J. H. McClain, Bureau of Animal Industry, U. S. Department of Agriculture; J. A. Dinwiddie, poultry expert, Newmarket, Tenn.; Prof. G. M. Bentley, Entomol-



An Interested Audience.

ogist, University of Tennessee; J. N. Meroney, expert truck gardener, Columbia, Tenn.; W. J. Sowder, soils and crops, Johnson City, Tenn.; C. A. Hutton, dairy expert, University of Tennessee; Miss Lucy Buttorff, domestic science, Nashville, Tenn.; Mrs. J. O. Rust, domestic science, Nashville, Tenn.; Prof. J. W. Brister, State Superintendent of Public Instruction; Prof. M. W. Robinson, Assistant Superintendent of Public Instruction; Prof. P. L. Harned, High School Inspector; Fred Frazier, Department of Public Instruction; Prof. S. C. Gilbreath, President East Tennessee Normal, Johnson City, Tenn.; Dr. L. P. Brown, State Pure Food and Drugs Inspector, Nashville; Dr. L. J. Desha, Pure Food and Drugs Department, Nashville; Dr. John Frick, Pure Food and Drugs Department, Nashville; J. S. Henderson, Ten-

nessee State Fair, Nashville; Dr. Olin West, Rockefeller Hookworm Commission, Nashville; H. D. Tate, farm demonstration, Jackson, Tenn.; J. D. Strain, Anti-Tuberculosis League, Nashville; Charles C. Gilbert, good roads expert, Nashville; C. F. Striplin, farm demonstration, Maryville, Tenn.; J. E. Converse, soils and crops, Crossville, Tenn.; Verd Peterson, soils and crops, Murfreesboro, Tenn.; L. R. Neel, soils and crops, Nashville, Tenn.; Dr. H. H. Shoulders, Department of Health, Nashville, Tenn.; J. W. Russwurm, State Fair, Nashville, Tenn.; Edgar Foster, live stock attendant; N. S. Spraggins, cook; H. Raginhardt, waiter; Frank Van Pelt, machinery; Frank Harkleroad, herdsman; R. W. Rossiter, deep tillage expert; Miss Gertrude Hill, State Fair; Mrs. Pearl W. Kelley, State Library Commission.

During the last lap of the journey, over the Tennessee Central Railroad, a private car of that road, with several of the officials, was attached to the train. Among these were Rutledge Smith, Industrial Agent, Cookeville, Tenn.; H. B. Chamberlain, Vice-President; Superintendent L. S. Bourne and Trainmaster P. B. Smith.

The entire journey of the train over the State was made without accident or mishap of any kind, and without any sickness of any of the party.

It is hoped and believed by the Department of Agriculture and by the railroad officials who cooperated that very great good will result from the Agricultural Special. In the large crowds visiting the train everywhere the greatest interest was manifested, and the seed was sown for a spread of the knowledge of scientific agriculture and animal husbandry. It is hoped to repeat this trip next year, even on a larger scale.

IN THE DARK TOBACCO DISTRICT.

J. P. Killebrew, Special Agent for Tobacco of the United States Department of Agriculture, has made the following report on the condition of the crop in the Tennessee-Kentucky district:

Paducah District—The expansion in acreage, compared with the previous season, is 25 per cent. Cold weather and subsequent heavy rains caused plant beds to be prepared late. The plants grew rapidly, however, and auspicious weather conditions enabled transplanting to be done about the usual time and a good stand was secured. Heavy rains in June did some damage in low lands, but this is thought not to be serious. The condition on July 1 indicated a good crop.

Henderson or Stemming District—The increase in acreage over that of last season is 30 per cent. Plant beds were prepared and sown

late because of unpropitious weather at the usual time of sowing. The plants developed rapidly and, being ready for the field early, a larger per cent than usual of the crop was planted in May. Transplanting was finished early. The crop has been cultivated and, in general, has made uniform growth. The condition is much higher than last year and the promise is for good results.

Upper Green River District—The acreage is 19 per cent larger than in 1911. Plants were plentiful and although planting began early, dry weather ensued and about 25 per cent was planted late. The stand and growth are satisfactory and if favorable conditions prevail until harvest a good crop is promised.

Upper Cumberland District—The acreage has been increased 24 per cent. About half the crop was set early, but the remainder, because of the stoppage of planting operations by dry weather, was not set until after mid-June. The stand is good; growth and condition on July 1 indicated a good crop.

Clarksville and Hopkinsville District—The acreage has been increased 25 per cent. Plants, though scarce in some localities, were, on the whole, sufficient to plant the intended acreage. Wet weather during the first ten days in May interrupted the preparatiton of the land; at that time only about two-thirds of the intended acreage was ready, but about May 20 an improvement in the weather permitted that part of the crop to be set. Wireworms and cutworms did more damage than in years, and dry, cool weather killed many plants, making a bad stand. After good rains, about mid-June, the remainder of the acreage was set, the earlier fields replanted and a good stand secured. Because of extensive replanting the early planted fields are irregular in growth, and the crop as a whole, while in better condition than last year, is not so promising as in average years.

CULTIVATING POTATOES LATE.

The Virginia Truck Experiment Station has found that the best results in growing potatoes are obtained where the soil is kept level during the earlier cultivations, but as the season advances earth may be worked toward the vines by means of winged cultivators in order to keep the tubers thoroughly covered and free from sun scald.

It has also been found best to continue cultivation as late in the season as possible. Many Eastern Virginia growers do not stop cultivators until two or three weeks before digging is started.

THE JAPANESE PERSIMMON.

Paper Read by Thomas C. Schnicke Before Division of Horticulture,
East Tennessee Farmers' Convention and Institute,
Knoxville, May 21-23, 1912.

Gentlemen of the Farmers' Convention:

I have been requested to address you on the subject of Japanese persimmon culture in the East Tennessee locality, and I suppose that I have made the first experiment in the State of Tennessee, dating back twenty years or more. I have exhibited and sold the fruit until I am commonly called "Tom Schnicke, the Japanese Persimmon Man at Riverdale." And now I wish to draw your attention to the native



Scene at East Tennessee Experiment Station.

wild varieties that abound all over the State in many different shapes and forms of fruit, some round, some ovate, some flat blossom-ended.

Some of these varieties have many seed, others scarcely any. Some trees have been found to bear fruit entirely without seed, and some of these wild native varieties bear delicious fruit, while others can be found that are worthless. These wild varieties were found by the first settlers from Virginia and Kentucky, and the old-time settlers made a very fine quality of syrup and a very good drink similar to ale from the wild persimmon; and it seems that this climate is just the ideal home for the trees to grow and thrive in.

During the rebellion a company of Michigan Union soldiers were camping in this locality, and the boys ate our wild fruits and were so

fond of them that they declared Tennessee must be the "Garden of Eden." They found also fine wild scuppernong grapes and paw-paws in abundance.

I have come to the conclusion that Tennessee is justly entitled to a near claim on the original garden spot, as we can grow the finest fruits here, and especially strawberries, near Knoxville, which surpass in size and quality any berries grown anywhere in the United States. Our grapes are better than the California or Northern grapes; our corn and vegetables and flowers can't be beaten, and it rains and the sun shines here. Now, then, if you will please excuse me I will return to my subject pertaining to persimmons.

Twenty-five years ago I saw a wonderful fruit growing down in Florida. They told me it was called Japanese persimmons, and that the United States Government Agricultural Department had sent them down there for trial and they were successfully grown there. Then in a few years I concluded to experiment in Tennessee, so I procured one-half dozen scions of three varieties—Hyaknam, Tanashia and a nameless variety.

I grafted my scions upon native wild trees. Some of the scions grew, and in three years I had some fine specimens of fruit. I now have a great many trees growing on my small farm of 110 acres. I have had them to bear fruit for the last thirteen years, and they only failed to bear twice in that time; the bearing wood being frozen caused the failure those two years. I have grown fruit to weigh fifteen and one-half ounces each, and seedless, and, when ripe, are perfectly delicious.

One of my dealers claims that my fruit is far superior to the California-grown fruit. I gather my fruit the middle of October and place it in the cellar, where they ripen, and are then shipped to market as they ripen, which lasts generally until Christmas. I get from 40 to 75 cents per dozen wholesale. One dealer sells the largest sizes for 10 and 15c cents each.

I have had some trees to bear the third year one bushel basket heaping full from one tree alone. I had one four-year-old tree to bear 210 large specimens of fine fruit last season. And the government sent me a new Chinese variety last spring, called Tamopan or Grindstone, said to be very large and fine, and I was very glad indeed to get them.

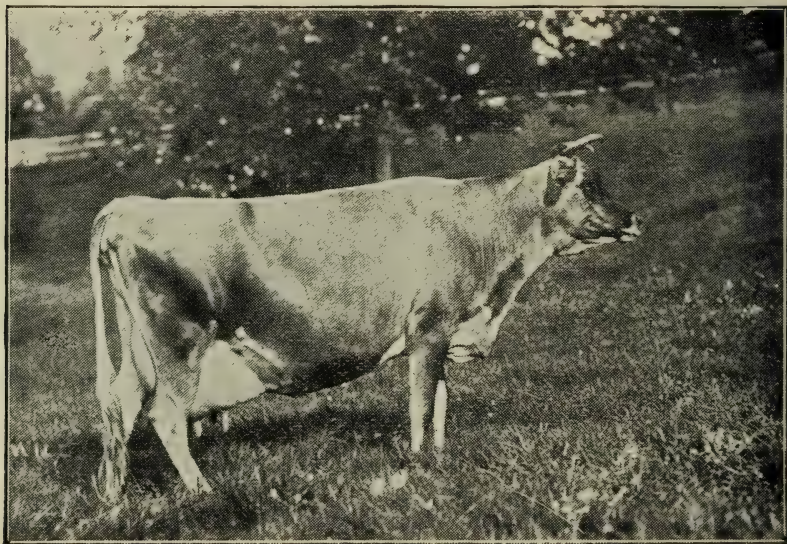
Now, gentlemen, I thank you for your attention, and hope that I have interested you as to persimmon-growing in East Tennessee.

HOME CONVENIENCES.

Address by Mrs. J. Taylor Stratton, of Madison, Tenn., Before the East Tennessee Farmers' Convention and Institute, Home-Making Section, Knoxville, May 21-23, 1912.

A boy working along industriously with his broken hoe was heard to say: "I am going to have a garden if I ain't got much of a hoe." Now, that was a fine, plucky spirit, and such a boy deserves a good hoe—the best on the market.

This little story characterizes the state of mind of the great majority of good housekeepers and good cooks throughout the country. With poor tools and few of them, they are pluckily tackling the job.



A Good Cow for the Farm.

of feeding the nation. The workman is worthy of his tools, and we all know that the worker with good tools has a great advantage.

That the problems of millions of housekeepers are demanding more attention each year, and that housekeeping is being recognized as a definite science, is shown by the fact that our schools and colleges all over the country are adding courses in domestic science and home economics. Not only are our daughters learning to be better housekeepers in the future, but the present-day housekeeper, one who already presides over a home, is taking advantage of it, and if she is unable to leave home she may receive lessons by mail from schools which are leading the way in practical education.

When a great many people want the same thing, some fertile

brain is sure to produce it. Millions of housekeepers are dissatisfied with the old way of doing things and desire to learn ways and means whereby they may save time, labor and money. Since the advanced cost of living has become such a vital issue in so many homes, many have dispensed with servants, and it is no longer the servant problem, but the servantless question which confronts them, and they ask themselves, How can we best get along without a servant? I answer by the use of labor-saving devices and conveniences in the home. This applies to the country as well as the city housekeeper.

In trying to solve the servantless question we are going to have a domestic administration more scientific, more efficient and economical and less laborious than that of the present day. The house work is being planned so that everything may be done with the least labor and in the shortest time, thereby conserving our strength and affording us more time for outside duties and pleasures. I will tell you how one woman solved the servantless question. She was paying her servant three dollars a week, and two dollars for her board, which is a low estimate, and doing more than half the work herself, with but few conveniences in her home. She dismissed the servant, borrowed two hundred dollars from the bank at six per cent interest, and invested it in labor-saving devices for the home. At the end of the year she paid back the money, with interest, and had fifteen dollars to her credit. She had the many conveniences left and was happy in doing her house work. This is a business proposition, and we farmers' wives would be as justified in doing this as our husband is in buying a wheat binder on three September payments.

This is, indeed, an age of wonderful inventions, and if some of the grandmothers could return and see the conveniences of the homes of today they would be speechless in astonishment. The vacuum cleaner, now so simplified that a child can clean the rugs and carpets, first made its appearance about three years ago. There are now on the market about one hundred and fifty makes, and one inventor has declared that it is hardly yet out of its swaddling clothes. The electric vacuum cleaners are better because they have more power. They have many attachments for doing other things besides cleaning the floors and walls. They even massage the face. Ladies, they not only give you clean houses, but make you beautiful also. The fresh air furnaces of today are not only labor-savers, but healthful, too. In the kitchen we find that the overworked woman cry for help has been answered by the invention of so many labor-saving devices. Now, I do not mean to say that all inventions are good, for we have before us constantly the pathetic procession of small manufacturers of house-

hold utensils who today are full of hope with visions of fame and fortune, and tomorrow are disappointed and bankrupt. Why? Because their inventions are not practical.

It cannot be estimated in dollars and cents what has been saved to the breadwinner of the family by the little food-chopper that clamps on the kitchen table, and I no longer believe that the French people can boast that they can live on what the American housekeeper throws away. The kitchen cabinet saves miles of walking to the housewife, and, with a whole storeroom before her, she sits in her high chair to prepare her meals. The bread mixer is a great labor-saver and every woman who bakes her bread should have one. I cannot say too much in favor of the fireless cooker, for I know from experience that a good one will do all that is claimed for it. One woman said that it solved the servantless question, but if it has not done that it has shown us that it is no longer necessary for a woman to stay away from Sabbath school and service to prepare a hot dinner for her family. Put the dinner in the fireless cooker, and when you return with your soul refreshed with a message from above, you will find awaiting you a hot, well-cooked dinner. The fireless cooker is the greatest labor and money-saver we have in the kitchen.

In the laundry we have many helpful inventions. The washing machine, with or without the motor which runs the machine and wringer at the same time. I know families who a few years ago would have scorned the idea of doing the laundry work, but today, with the labor-savers, they have the clothes on the line at an early hour, and it is no longer a woman-killer.

Time forbids me mentioning more of the many conveniences, some of which may be purchased for 5 or 10 cents, but, ladies, let me beg you to save your energy by the use of these and many more in your homes. Do not expend all of your strength in house work, but save some for the outside duties which confront you and the pleasures which you should enjoy. I ask especially ladies on the farm to have these conveniences, for your burdens are heavy, and you, above all others, should have them.

I have never yet seen the treasury too low to buy the sulky plow or the needed implements on the farm. Does not the wife, the mother, deserve more, for "Man's work is from sun to sun, but woman's work is never done," and often long after father and children are in dreamland the mother sits stitching on clothes for the little ones. Ladies, let us take care of these bodies, for they are temples of the Holy Ghost and the vehicles of the soul, and we shall have to account for the care given them.

THE WOMAN OF THE FARM HOME.

Address by Mrs. Charles O. Browder Before East Tennessee Farmers' Convention and Institute, Knoxville, May 21-23, 1912.

I 'lowed that sence I had promised to come up here an' tell you folks about the woman of the farm home I'd jump right into it jist about like I do a good day's work.

The first thing to do is to dread it. Now, if thar's a woman in my hearin' that don't dread that first pull of gettin' up an' startin' at it, I'd like to look her in the face—for I know she's a-plum curiosity.

An' I reckon the first thing you men think of is "Hurry up with breakfast; I've got to git to work."

Well, you git a fire goin' in the cook stove, maybe with wet wood an' maybe with dry; put on water for coffee, make up bread, an' fry



Sheep Grazing—A Profitable Industry in Tennessee.

meat, an' hop from one place to another, a pokin' the fire an' skimmin' the milk, an' settin' the table—half the time, maybe, a walkin' over, around, on two er three cats, an' hearin' the pup a whinin' an' the little chickens a cryin'. Everything in hearin' a callin' fer sompin' to eat an' a dependin' on you fer it.

Somehow it all puts a spring into you an' you begin to step around purty lively, whether you feel like it er not.

About that time Johnny pokes his towzly yaller head in at the kitchen door an' 'lows he cain't find but one of his shoes an' he cain't go to school if he don't—which you know is the truth, fer he hain't got but the one pair.

Atter spendin' enough time a helpin' him hunt it to let the bread

burn in the bottom, you find it out under a little peach tree, whar the pup had drug it.

The next thing that strikes you, mor'n likely your ole man a wantin' to know if breakfast is ready; that if it hain't he'll jist do without, sence it will be dinner time in a hour er two. Sich remarks kinder hurts at first, but atter some experience we all l'arn that it's his stomick instead of his heart a talkin'.

I've heard it said that if a woman can keep ca'm and sweet until atter eight o'clock in the mornin', she'll likely pull through the day in purty good shape, an' I believe it. Fer with fixin' dinner baskets fer school, inspectin' all the younguns fer dirt, buttons, books, hats, an' so on, and dealin' with forty other things that comes up unexpected, she's had a purty good test.

My ole man says that the reason things pile up on me so is beca'se I hain't got no system. I tell him that he don't know nothin' about it—that it's two heads, four hands an' four feet that I need. That system works sorter like machinery—without interruptions.

I'd like to know how you can adjust a machine that can stop in the middle of gittin' supper to weigh a piece of meat for the hired man, er draw a gallon of coal oil fer him, or tell him what to do fer his sick baby, an' more'n likely hunt up the medicine fer it, an' then allers have the comforts of your family ready fer 'em on the stroke of the clock.

Sometimes it 'pears to me that woman's work does go something like a wheel—fer it's git up, git breakfast, wash the dishes, git dinner, wash the dishes, git supper, wash the dishes, go to bed, git up, git breakfast, wash the dishes, an' so on.

Why, I could make a tale without end an' never say nary nuther word.

You've heerd about that woman that went crazy, hain't you? Her ole man 'lowed that he couldn't see whut under the sun had got into her head to affect her mind—that she hadn't been away frum home in more'n twenty years. How many of you men can tell the same about your wives? You'd better look out.

Along with other things, it's a woman's business to keep her husband's affections, an' one of the best ways to do it is fer somebody to spend a good part of her time in the kitchen.

Thar's nothin' more satisfyin' than to stir around on a hot day an' git dinner an' then see your ole man set an' gulp down in about ten minutes whut it taken you two hours to cook. An' then see him stretch his self out on the lounge without takin' off the shoes he's been plowin' in er noticin' that he's wallerin' on the cleanest piller

you've got, while you wash up the dishes an' pots, an' tote out the slop, an' water the chickens, an' trot frum this place to that till your feet feel like they'd drap off.

About that time he'll wake up a feelin' good an' tell you that if you'll lay out his clothes an' git a pan of hot water while he's a gearin' his horses, he'll shave an' go to town on a little business.

While he's a shavin' you slip out to see how many eggs you can find to send by him. Just as you are countin' off the last dozen here he comes a lookin' kinder helpless with his collar a stradin' his neck. Without a word, you go fer the button hook an' shape things up under his chin. Then you hand him the eggs an' foller him to the door, a tellin' him whut to fetch home.

As he rides out of sight your eyes wander acrost the meader down



Farm Scene in Lincoln County.

by the creek an' you see the cows layin' under the trees. You are so hot an' tired that you feel like that woman in Kaintuck who couldn't think of nothin' on earth that she'd ruther be than one of them cows layin' down thar in the shade.

The baby is asleep an' ever'thing is so still that you are jist obleeged to take a smidgin' of a nap, even if sewin' an' garden an' all sich is a callin' you.

About the time you are a dreamin' that you are one of them cows down in the meader, somebody a callin' wakes you. You go to the door an' thar stands the hired man with the "good news" that a bolt's broke outen the mowin' machine an' he can't do nuthin' with it till the "boss" gits back. That, bein' as he don't know whut to go at, he'll

jist knock off an' go to town fer some things that he's a needin'—that is, if you kin let him have about a dollar an' a half of whut's comin' to him on his wages.

A body hain't got the heart to turn a pore, hard-workin' man away without whut is due him. You hain't got no money except whut's in the egg box, an' you've been a savin' so clost to get new curtains an' wall paper fer the setin' room.

But you let it go, a hopin' that you'll git it back some day. Hope is a powerful tonic, but sometimes I feel like I've run atter it till I'm out of breath an' ready to drap.

Now, thar's waterworks I've been a hopin' fer to save havin' ter tote so much water fer the kitchen work, an' here last spring I kinder thought maybe my hope wuz takin' shape, when one day I seen a ditch a gapin' in the meader, an' when I axed Daniel whut it meant, he looked kinder sheepish an' 'lowed he wuz a fixin' to put tile down that so's he could grow corn on it.

I begun to feel sorter shaky, but never let on—I says to him, says I: “Why, Daniel, kin you afford to do that an' put waterworks in, too?”

He chawed on his quid of terbaccar for a minute, sorter hesitatin', then he says, says he: “No, Sary, I can't do both this year—but I believe I kin raise enough corn on that meader in two years to pay fer the tilin' an' then I'll be in better shape to fix up about the house.”

Well, the thing was settled. Thar wuzn't no use in arguin', so to air my feelin's, I jist makes the excuse of goin' out to set a hen.

When I got off to myself, with nothin' but a fussy ole hen fer company, I jist set down an' cried it out. While I wuz a settin' thar cryin', other things come to my mind, sich as that ole corn harvester he bought two years ago an' paid sixty dollars fer, an' never used it but one week, an' then left it out in the weather, while I wuz a needin' a new cook stove three times a day every day in the year.

I tell you when a woman has many experiences like that she cain't hardly keep from wishin' she was dead. But it wouldn't work sich a awful hardship on nobody if she wuz to die, except for a short spell of time. Why, thar's a plenty of other women that wouldn't hesitate a minute to step right in an' take your place.

Did you ever hear what Josh Carter said to Charley Bowman when Bill Simmens wuz a haulin' lumber to build the house fer him an Cory afore they wuz married?

They wuz a settin' on the side of the road a chawin' an' whittlin', when Bill went by with a load, and Josh, he says, says he, “Wa'al,

wa'al, wa'al, hain't it a strange thing that folks will git married? Thar ain't nothin' in it but trouble frum beginnin' to end.

"Wa'al, as you say, it may do very well fer some folks, but fer a feller that's as pore as I am, if he don't git a gal whut's got sumpin' he'd better let the whole thing alone.

"Wa'al, I reckon it is all right fer some folks, though. It's accordin' to the way of nature, an' if most folks don't get married they think they might as well be dead.

"An' I spec' it is a very good thing fer some folks, an' then I reckon' it has kep' some folks out of the penitentiary an' some frum bein' hung.

"But you kin jist put it down fer dead sartin that as shore as the Lord made little pertaters he made a heap of little folks whut thinks



Lincoln County Feeders.

that they'd be fittin fer President or anything else if they could only git married.

"Now, when I see a feller like Bill a gittin' off, I jist figger it otu, without no figgers er paper er pencil nor nuthin', that thar ain't but one kind of a woman that won't get married—and that's a dead woman."

Well, when I thought about whut Josh said, I got to laughin', got up an' set the hen, then went out into the garden. Do you know, that's the best place in the world to git your bearin's. Thar's sich a comfort in scratchin' around little growin' things an' seein' the roses bloom, an' hearin' your children run about so happy a stickin' ther

noses to the flowers like little hummin' birds. Why, the sight an' sound of it is enough to put a new heart into anybody.

In my opinion, it's a lack of understandin' between a man an' his wife that is the cause of most of the trouble, anyhow. You know they claim to be pardners.

Now, if me and Daniel had a had a understandin', I wouldn't a sold his seed corn. Yes, that's whut I done. You see, it wuz this away: The feller come along an' told me that Daniel said he could have some, an' the hired man 'lowed that thar wuz some already shelled.

When Daniel come in I told him what I had done. Well, sir, he wuz that put out he didn't want no dinner—said he had picked that corn almost by the grain an' that thar warn't no money that could have bought it frum him.

The rains have been powerful hard on us this spring, but that day wuz one time I wuz glad the ground wuz soakin' wet, fer I knowed that narry grain of that corn had been planted. So, as soon as I could git my wits together, I slips out an' hitches to the little yaller buggy an' starts fer it. It taken about eight mile, or sich a matter, to make the round trip.

When Daniel seen me a moseyin' back with the corn we both taken a good laugh, but you can jist put it down for dead sartin—I won't never sell no more seed corn.

When I got to the house, thar stood a tramp a wantin' a bite to eat. Law, it hain't no surprise to see a tramp or a agent, one, at the door. An' then company a droppin' in unexpected hain't no uncommon thing, nuther.

We hain't allers prepared fer 'em, but if we are able to git about we are jinerally right glad to have 'em. You see, it sorter helps a body frum narrerin' down to nuthin'. They give you somethin' to think about besides your own ailments.

Once in a while we invite in a right smart gatherin' of friends or kinfolks an' kill a turkey an' have things fixed up as nice as you please.

But, speakin' of turkeys, hain't they the aggervatenest things you ever seen? I believe I could write a book on the experiences me an' my neighbors has had with 'em. They hide out an' lay thar eggs an' maybe the crows eats 'em up. You know if you don't watch whar ther nests is an' git the eggs ever' day, more'n likely you'll never see ner hear tell of 'em.

Why, I've neglected my family many a day to watch the sly things a sneakin' to ther nests. Then, atter you git the little turkeys hatched

out they'll grow up an' fergit you. I've walked a mile many a evenin' a drivin' 'em home so's they l'arn whar they belonged at.

My experiences has been enough fer me, but whut Miss Simpson went through beat all I ever heerd tell of.

She lives nigh the railroad, you know, an' thar's a sidetrack right back of the house. Well, she tried chickens an' turkeys, an' it 'peared like she couldn't keep 'em offen the track. The outcome of it wuz, the train run over 'em almost as fast as they wuz hatched.

Atter havin' so much bad luck, she 'lowed that she would try guineas. They wuz sich shy things they'd shorely keep from the cars. Well, she got along splendid till her drove wuz up to about sixty-odd.

'Long towards the shank of one hot evenin' she walked down to the spring fer a fresh drink.

Thar wuz a freight train on the sidetrack. She didn't pay no 'tention to it ner nuthin'; but as it begun to pull out she happened to



A Tennessee Farm Scene

look up—an' whut do you reckon she seen? Why, 'ever' last one o' them sixty guineas a ridin' off on them cars. An' she never seen ner heerd tell of narry one of 'em no more. That hain't no tale that I've made up, nuther.

I could talk on and on about house-cleanin', an' garden-makin', an' cannin', an' preservin', an' jelly-makin' until you'd git wore out. Sometimes we git wore out, too, while it's a goin' on, but I don't reckon' thar's a farm woman livin' who would be willin' to deny herself all them good things laid by in store. I tell you it's a comfort to have

sich right wher you can lay your hands on it an' know that it's clean and the pure stuff.

Thar's anuther time when we are wore out, an' 'that is when we have to cook fer thrasher hands, an' ensilage cutters, an' corn shredders, an' all that. It has to be done, but it don't last so long in this day an' time.

Then thar's the county fair in' the fall, when you want to make as good a show as your neighbors an' help along at the same time.

Then a hog-killin' time comes when you git to feelin' 'most as greasy as a hog yourself with so much sausage an' bones to do away with.

Sprinkled all through the year is them rainy days when your ole man can't git out to do no kind of work. He is that restless an' chaws so much terbaccer that you try to fergit your own worries an' feel obleeged to give him more notice than common.

When we git in a tight place we try to hire a gal to help us, but by the time we've put up with ther ignerence an' keerlessness fer a spell we feel like we jist cain't stand it no longer.

Now, thar's my washin'. With plenty of water right at hand, I cain't git Jane Parks to half-way rench the clothes—why, sometimes ever' rag I put on smells like soapsuds.

Thar hain't no use in denyin' that thar's plenty of work fer a farm woman to do, an' some tries to do it all. Thar's mighty few that has sence enough to know when to shet ther eyes an' quit. Of late some are a comin' up here to these conventions to ketch on to how to do things in a easier way.

For my part, I love the farm home with its fields a sprawlin' about me. I love my good neighbors. Ther's a good many things about it that might be better an' thar's a heap that might be worse.

An' then thar's the children. Ever' child that hain't never had a good taste of life on a farm has been cheated of his birthright. Jist think of how happy they are these spring days a rollickin' barefooted over the grass a chasin' butterflies, er young calves an' colts, an' huntin' hens' nests in the barn loft. An' then, as the sun goes down, how their tired little legs brings 'em home.

Already I'm beginnin' to think of gittin' back, an' I kin almost hear my children's glad voices as they run down to the gate to meet me while they make a jumble of news about the new colt an' baby chickens an' all that.

An' then supper over an' the little fellers tucked away in bed, me an' my ole man will set out on the porch an' talk it all over. No clangin' cars ner sudden pealin' of fire bells. Ever'thing so quiet an'

peaceful. The moonlight glimmers acrost the meader, an' a mockin' bird is singin' in the maple down by the spring. A breeze rocks the birds' nests, an' thar's the smell of roses an' honeysuckle.

I'll look up at the sky an' see the stars, an' somehow I cain't keep



Four Thousand Turkeys on Public Square at Fayetteville, Tenn.

frum thinkin' that they are little peepholes the angels has made an' the light is Heaven a leakin' through.

When that big ship went down an' so many lives wuz lost, did you think of how different it might have been if that other ship that wuz so nigh had only been in time?

We can plan an 'think with our heads an' work with our hands, but it don't make no difference who you are ner where you live at, if you don't keep in tune with the little ever'day things about you, you hain't worth much to nothin' ner nobody.

After lambing ewes should not be fed too heavily for a week or two. Bran alone is a good ration for the first few days. Gradually the ration can be increased using one part bran, one part oil meal and five parts corn. Sheep may be turned out earlier than other farm stock, for they seem to thrive better when allowed to keep down rank growth of grass in their pastures. But when they are first turned out they should be fed some dry supplementary foods until they get somewhat accustomed to grass.

IMPROVED SEED ARE BEST.

I believe that every farmer would find it profitable to devote a certain portion of his farm to growing seed for the coming year, says an agricultural expert. In this way he could buy seed each year and plant it on his test grounds and grow all that would be required for his next year's crops.

One quart of some new variety of field corn would grow enough seed to plant quite an acreage and the cost would be comparatively small. A peck of some new kind of potatoes would furnish seed for quite a patch next year. One bushel of seed oats would furnish enough seed for a number of acres the next year.

This would give the seed an opportunity to become better acclimated and he could select the best seeds for home use, which is an opportunity that seldom comes to a farmer who buys seed from the seedmen who sell it from the general crop which is raised by farmers especially for them.

Then there is always an opportunity for a farmer to sell choice seed oats, corn or potatoes to his nearby friends for a better price than his general crops will bring. The time is coming when good seed will be better appreciated by farmers.

THE EXPORT OF WHEAT.

Although we are rapidly approaching the time when the grain crops will have to be materially increased to satisfactorily feed our own population, we have not yet reached that point. During the past three years the Department of Agriculture estimated the farm value of wheat at 98.6 cents in 1909, 88.3 cents in 1910, and 87.4 cents in 1911. These are very modest figures from the standpoint of the farmer. Wheat was exported in considerable quantities over and above the amount required to feed the people.

The 1909 crop of wheat was 673,653,000 bushels, and out of the crop the exports amounted to 44,353,994 bushels and 8,992,420 barrels of flour.

The 1910 crop of wheat was 561,051,000 bushels, and out of the crop the exports amounted to 23,441,354 bushels of wheat and 10,095,988 barrels of flour.

Commencing now, the farmer ought to be able to get his flocks of hens and pullets shaped up so as to have plenty of eggs all through the coming winter.

ORIGIN OF PEKIN DUCK.

The Pekin duck is of Asiatic origin, and was imported to this country from China thirty or more years ago. Hudgens says a traveler who saw them about the streets of Pekin mistook them for small white geese at first, but upon finding that they were ducks was so greatly impressed with their snow-white plumage and noble carriage that he secured some of their eggs. They were brought to Hong Kong and hatched, and in due time the birds were shipped in a vessel bound for New York. A number of the ducks died during the long sea voyage, but from the rest has sprung this popular breed that is now met with in nearly every state in the union.

PRODUCTION OF EGGS IN ONE YEAR.

According to a recent report of the Census Bureau, the production of eggs on farms of the United States in 1909 was 1,591,000,000 dozen, valued at \$306,689,000, equivalent to 19.3 cents per dozen. This production is equivalent to 207 eggs per capita of population, which compares with 203 eggs per capita of population reported by the 1900 census, 156 by the 1890 census, and 109 by the 1880 census. As less than 1 per cent of the eggs produced are exported and almost none imported, production may be regarded as equivalent to domestic consumption. In the fiscal year ending June 30, 1910, the exports of eggs were 5,326,000 dozen and imports 818,000 dozen. A small proportion of the production is used for manufacturing purposes. The census report does not include the production of eggs in cities, towns and villages. According to an estimate given in the census report of 1900, the production of eggs off farms was equal to about 5 per cent of the production on farms; on this basis about 80,000,000 dozen eggs would have been produced off farms in 1909.

According to the census figures the production of eggs increased 23 per cent from 1899 to 1909, but the commercial movement shows a much greater increase. Seven cities combined (New York, Boston, Chicago, St. Louis, Cincinnati, Milwaukee and San Francisco) received about 369,000,000 dozen eggs in 1909, an increase of 70 per cent over their receipts in 1899. Population had increased between 1900 and 1910 about 21 per cent in the United States, but 31 per cent in the seven cities named above. The receipts at these seven cities in 1909 were equivalent to about 23 per cent of the production as reported by the census, as compared with 16 per cent in 1899.

LITTLE FARM HINTS.

Never mix sun slaked lime with manure, as it will cause the escape of ammonia, one of its most valuable elements.

Clean out the chaff and hayseed on the barn floor and scatter it over bare places in the lots and pastures. This scattered seed represents good money value, and it should be put to good purpose.

If you want spinach for use in early spring, at the time when dan-



Part of Dairy Herd.

delion greens are ripe, sow seed in September or October. Frequently it does not winter well, especially if not protected by covering lightly with litter.

Where practicable the fruit orchards should be planted in autumn. Among the principal advantages are leisure time, better physical condition of soil and the early establishment and consequent earlier growth of trees. Owing to its less hardy nature the peach is to be excepted from the fall planting.

It is as profitable for our farmers to feed what they raise to cows, pigs and chickens as anything they can do with it. Of the three things mentioned chickens are the most profitable.

ILLITERACY IN TENNESSEE.

State Superintendent of Public Instruction J. W. Brister, noting the figures of the Census Bureau as to illiteracy in Tennessee, has addressed a letter to the county superintendents urging a campaign for better work along educational lines, particularly among adults. After quoting figures from the Census Bureau report, the Superintendent concludes as follows:

"It can be accomplished, I believe, by a whirlwind campaign. The object is so appealing, so full of human interest, that it will reach every patriotic man and woman in your county; the preachers will come to your aid and the churches be converted into schools; the teachers will rally to you and give their time gratuitously to this service; the professional men of affairs, the noble women will lend a hand, the press will give cordial endorsement and support, and for the time being you can have your whole county in school—either as teachers or pupils. Can you conceive of a grander spectacle?

"The direct effects of such a campaign will be important and far-reaching, but the indirect will be even greater. Such a sentiment will be created that the schools will be brought into their rightful prominence the work of the school will be more appreciated and your county will resolve that never again shall such a task be necessary. I believe it will mean compulsory education law for the whole State, larger attendance, more effective adult cooperation, more money for educational purposes, and a brighter day for the whole State."

BIG PROFIT IN SHEEP.

That sheep can be profitably raised in Tennessee, and especially on the Cumberland Plateau, is demonstrated by a statement from the *Crossville Chronicle* in regard to the experience of Samuel Tollett, of Creston, Cumberland County. Mr. Tollett bought eight sheep three years ago, paying \$22 for them. Two years later he bought two more for \$5, making \$27 expended. Since that time he has realized \$65.40 for mutton and wool and has now forty-nine head of sheep worth \$150, making a net profit in three years of \$188.40.

A sheep must be fat to obtain the most mutton, but at the same time a thrifty, well fed sheep produces more and better wool than an unthrifty one.

The wool that comes from the back of the sheep is good, bad or indifferent, according to the manner in which it has been fed.

Constant attention to your work, with ambition to excel in it, will inevitably qualify you to fill honorable positions.

FAIR DATES FOR 1912.

Following are the dates allotted for fairs to be held in this State for the year 1912, with the names of the Secretaries of the various associations:

Postoffice.	County.	Dates.	Secretary.
Alexandria	Dekalb	Sept 5-7	Rob Roy.
Big Rock.....	Stewart.....	Oct. 3-5.....	E. P. Martin.
Brownsville.....	Haywood.....	Oct. 11-14.....	W. S. Lea.
Celina	Clay	Oct. 3-5	W. F. Brown.
Cleveland	Bradley	Oct 15-18	B. D. Moore
Columbia.....	Maury.....	Sept. 10-13.....	W. H. Puryear.
Concord	Knox	Sept. 10-13	F. H. Borling.
Deer Lodge	Morgan	Sept. 24-27	M. M. Goad.
Dresden	Weakley	Oct. 9-12	W. R McWhirter.
Dyersburg	Dyer	Sept. 10-14	W. C. Paris.
Hickman	Gibson	Sept. 18-21	C. W. Rooks.
Humboldt	Carroll.....	Oct. 1-5.....	W. H. Eason.
Huntingdon.....	Centreville.....	Oct. 1-3.....	R. H. Clagett.
Jackson	Madison	Sept. 24-28	W. F. Barry.
Kingston	Roane	Sept 3-6	T. E. Goodwin.
Memphis	Shelby	Sept. 23-28	F. D. Fuller.
Morristown	Hamblen	Sept. 25-27	R. F. Taylor.
Mountain City..	Johnson.....	Oct. 9-11.....	D. H. Connelly.
NASHVILLE			
(State Fair) ..	Davidson	Sept. 16-21	J. W. Russwurm.
Newport	Cocke	Sept. 18-20	J. F. Stanberry.
Pulaski.....	Giles.....	Sept. 24-28.....	Laps D. McCord, Jr.
Rhea Springs ..	Rhea	Oct. 2-7	H. B. Payne.
Rome	Smith	Sept. 12-14	A. T. Williams.
Shelbyville	Bedford	Sept. 5-7	W. E. Gant.
Sweetwater	Monroe	Oct. 1-4	Jas R. Love.
Selmer	McNairy	Oct. 15-18	W. K. Abernathy.
Union City	Obion	Sept. 4-7.....	
South Pittsburg .	Sequatchie.....	Sept. 25-27.....	W. H. Wilson.

ALL OVER THE STATE.

The Tennessee Power Company, with a capitalization of \$20,000,000, has been granted a charter by Secretary of State Goodloe. The company already has in operation a plant on the Ocoee River, and will develop the Great Falls of the Caney Fork. It is stated that the total horsepower to be developed will be 161,000.

Numerous outbreaks of hog cholera have been recently reported. It appears that hog cholera is unusually prevalent in each of the grand divisions of the State. Vaccination with anti-hog cholera serum is being advised.

The work of sheep scab eradication in several counties of Middle Tennessee is progressing satisfactorily under the direction of Dr. G. R. White, State Live Stock Inspector, and Dr. R. G. Lawton, U. S. Veterinary Inspector.

GREAT STRAWBERRY CROP.

The strawberry crop in Tennessee this season was the greatest ever raised in the State. It is probable that the berry crop in what is known as the Chattanooga district will bring the producers this year nearly a million dollars, notwithstanding they were unable to get all of their crop on the market. During the latter part of the season prices decreased, and there was a let-up in picking, much of the luscious fruit being left in the field to rot.

On one day there were shipped from the Chattanooga district sixty-six cars of berries, the largest day's shipment in the history of the berry industry in this State. Large shipments were also made from Cleveland, in East Tennessee, and from Milan and Humboldt and other points in West Tennessee. Good shipments were also made from Nashville and many points in Middle Tennessee.

This industry is growing in Tennessee, which produces a berry unexcelled anywhere. Great profits would have been made by the growers had prices remained high enough to justify them in having all the crop marketed.

SUMMARY OF AUGUST CROP REPORT.

**T. F. Peck, Commissioner, Department of Agriculture,
Nashville, Tenn., September 1, 1912.**

With the exception of cotton and corn, the crop prospects in Tennessee, as shown by the crop reporters of the Department of Agriculture, will compare favorably with the season of 1911.

Too much rain during the working season prevented cotton and corn from receiving proper cultivation, and as a result the yield will not come up to the 1911 crop. However, good rains from the 7th to the 11th of August and afterwards during the month, coming at the time needed, very greatly improved all growing crops, and yields will be larger than farmers had reason to expect earlier in the year.

Cotton is three to five weeks late, and good season may increase the yield over what is now expected by the farmers in the cotton belt of the State. Late corn is improving, and pastures are showing well.

Some sections report a very large acreage in stock peas, which are

in good condition, and will make much good hay, besides improving the land.

In most sections of the tobacco area of the State the crop is reported in fairly good condition; in some places it is reported excellent, while in others there is complaint of the poor condition. The indications are that the yield in the State will about equal that of last year.

A fairly good crop of sweet potatoes is indicated by the reports received from over the State, but the crop will not equal that of last year according to estimates received.

The peanut crop gives promise of about equaling the production of last year. This crop is being more generally cultivated over the State, and has been found very profitable.

Too much rain during the season has caused crab grass and weeds to come up in alfalfa, and as a result there is some complaint of thin stands in some sections of the State. In other sections this crop is reported in excellent condition.

Reports received from many sections of the State indicate a prevalence of hog cholera, and there has been considerable loss on this account. With the exception of this trouble, the condition of live stock in the State is reported to be very good.

One of the largest fruit crops in the history of the State is indicated, and in some sections, where care has been taken in preparing the fruit for the market, good prices have been realized.

Taking the reports from our crop correspondents all in all, the farmers of Tennessee as a whole have very little to complain of, especially as regards promises of crop yields. When sanitation in the handling of live stock is better understood and practiced, there will be less to complain of in the way of hog cholera and other animal diseases.

Below is the summary, for comparison, of the reports of this Department for August, 1911 and 1912:

	1911	1912
	Per Cent	Per Cent
Cotton, condition	82	73
Millet, condition	79	80
Corn, condition	90	78
Tobacco, condition	72	78
Stock Peas, condition	86	86
Sweet Potatoes, condition	82	79
Sorghum, condition	81	89
Tomatoes, condition	80	82
Peanuts, condition	78	76
Clover, condition	67	83
Live Stock, condition	88	89
Alfalfa, condition	76	82

DISTRICT	COUNTY.												
		Cotton—condition, per cent.	Millet—condition, per cent.	Corn—condition, per cent.	Tobacco—condition, per cent.	Stock Peas—condition, per cent.	Sweet Potatoes—con- dition, per cent.	Sorghum—condition, per cent.	Tomatoes—condition, per cent.	Peanuts—condition, per cent.	Clover—condition, per cent.	Live Stock—condi- tion, per cent.	Alfalfa—condition, per cent.
A Alluvial Plain of the Mississippi River and Plateau Slope of West Tennessee.	Lake	73	80	65	...	90	90	75	85	90	95	95	90
	Obion	68	90	68	95	65	93	83	95	75	100	95	93
	Dyer	60	100	40	...	100	75	80	90	...	...	75	...
	Lauderdale	79	93	73	90	93	71	82	85	70	73	84	95
	Tipiton	71	95	71	...	96	86	81	78	...	81	94	100
B Brown Loam Table- lands, Middle Counties of West Tennessee.	Shelby	75	75	100	...	100	100	100	90	...	100	90	100
	Weakley	71	...	74	78	78	78	78	85	80	73	83	...
	Gibson .....	...	...	...	...	...	...	...	...	...	...	...	...
	Crockett	58	75	65	...	78	83	68	...	...	78	78	...
	Madison	65	90	90	100	100	100	100	100	100	100	100	90
C Summit Region of Watershed, West Ten- nessee.	Haywood	68	...	60	...	75	75	72	...	...	40	78	...
	Hardeman	77	80	82	...	88	65	62	90	90	88	93	...
	Fayette	70	80	78	...	86	83	89	65	...	...	88	...
	Henry	70	90	88	75	90	88	80	83	...	80	82	...
	Carroll	73	75	78	75	73	95	88	100	90	85	95	...
D Valley of Tennessee River, West and Mid- dle Tennessee.	Henderson	68	...	65	...	85	73	50	...	...	65	78	...
	Chester	80	80	60	...	90	90	95	80	...	70	78	...
	McNairy	67	100	70	...	78	70	68	72	70	...	83	...
	Stewart .....	...	63	80	65	83	78	80	70	...	100	90	...
	Benton	70	35	63	...	73	100	75	75	70	40	70	...
E Highland Rim of Mid- dle Tennessee, West- ern Subdivision.	Houston .....	...	72	82	70	85	70	87	78	90	73	83	88
	Humphreys .....	...	65	83	50	85	48	70	65	65	50	88	...
	Decatur	70	73	68	...	75	80	70	75	78	75	78	...
	Perry	70	70	63	...	78	74	63	80	73	75	89	...
	Hardin	72	72	77	100	73	80	95	100	...	75	87	...
	Montgomery .....	...	90	80	78	90	80	78	70	50	88	90	90
	Robertson .....	...	100	75	90	98	...	100	75	...	63	95	...
	Cheatham .....	...	90	88	75	93	78	93	80	...	100	...	...
	Dickson .....	...	...	...	...	...	...	...	...	...	...	...	...
	Hickman	70	75	80	70	90	83	75	80	75	88	90	60
	Lewis	100	38	63	100	75	58	80	75	65	95	100	75
	Wayne .....	...	...	100	...	75	75	50	...	...	100	100	...
	Lawrence	80	50	75	...	100	75	50	100	75	100	90	...

AUGUST CROP REPORT FOR 1912—T. F. PECK, Commissioner of Agriculture

DISTRICT	COUNTY.	Cotton—condition, per cent.	Millet—condition, per cent.	Corn—condition, per cent.	Tobacco—condition, per cent.	Stock Peas—condition, per cent.	Sweet Potatoes—con- dition, per cent.	Sorghum—condition, per cent.	Tomatoes—condition, per cent.	Peanuts—condition, per cent.	Clover—condition, per cent.	Live Stock—condi- tion, per cent.	Alfalfa—condition, per cent.
F Highland Rim of Mid- dle Tennessee, Eastern Subdivision.	Macon	60	60	60	50	70	70	75	80	40	40	80	...
	Clay	63	55	55	25	90	93	63	100	...	75	100	...
	Pickett	50	50	50	50	50	90	75	90	...	75	90	...
	Overton	87	87	87	75	80	88	92	92	...	88	85	...
	Jackson	95	73	73	75	80	80	78	90	...	88	90	...
	Putnam	90	75	60	60	85	80	85	...	...	88	85	...
	DeKalb	80	75	65	75	70	80	85	...	...	88	90	...
	White	90	70	100	100	90	95	90	95	...	90	90	...
	Warren	73	80	80	80	95	100	88	...	...	83	90	...
	Coffee	80	78	...	...	85	80	80	80	75	90	85	...
	Franklin	80	60	100	100	80	...	100	...	...	90	80	90
	Sumner	70	82	73	82	92	85	73	85	90	80	82	90
	Trousdale	80	50	50	50	100	95	95	...	...	88	95	...
G Central Basin.	Smith	75	75	100	65	100	60	65	80	...	88	100	...
	Davidson	100	100	100	...	100	70	100	90	...	80	80	40
	Wilson	100	85	...	...	95	84	77	90	...	83	92	...
	Williamson	90	90	90	75	90	70	75	80	...	75	90	...
	Rutherford	68	70	90	95	83	83	80	...	...	90	93	...
	Cannon	65	63	70	60	60	75	75	60	50	80	60	60
	Maury	85	78	87	80	87	62	90	75	50	87	88	...
	Marshall	90	83	80	80	88	63	80	85	65	88	93	...
	Bedford	73	73	80	...	93	70	70	...	...	90	88	60
	Giles	50	70	80	...	90	73	55	70	60	90	83	60
	Lincoln	75	78	...	...	73	90	73	90	...	85	98	90
	Moore	83	73	...	...	73	85	55	85	...	93	90	...
H Cumberland land.	Scott .....	...	...	...	...	...	...	...	...	...	...	...	...
	Fentress .....	...	...	...	...	...	...	...	...	...	...	...	...
	Morgan	55	80	80	80	80	96	73	85	...	80	94	...
	Cumberland	95	85	80	90	90	85	75	85	75	85	95	85
	Van Buren	88	83	83	75	75	88	88	100	...	95	98	...
	Grundy	95	65	...	...	100	90	100	100	...	100	100	...

J Cumberland Table- land and Valley of East Tennessee.	Claiborne	...	80	75	80	...	80	...	75	80	...	80	...	75	80	...	
	Campbell	...	92	80	97	88	82	88	80	87	93	...	...	...	...	...
	Anderson	...	60	67	88	98	85	78	85	95	88	92	95	...	...	...
	Rhea	...	...	75	85	75	80	80	90	80	85	...	...	...	...	...
	Bledsoe	100	100	100	95	88	80	100	100	100	100	100	100	100	100	100	
	Sequatchie	...	75	...	75	100	88	75	100	88	75	100	75	...	...	...
	Marion	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Hamilton	...	60	70	...	50	75	90	...	50	...	50	75	...	...	...
	Sullivan	...	95	90	...	85	...	...	...	...	...	100	85	...	...	...
	Hawkins	...	50	90	...	95	93	95	85	...	...	...	98	...	...	...
	Hancock	...	80	85	90	90	90	75	80	90	98	...	80	90	...	...
	Washington	...	95	85	75	95	90	93	93	...	...	...	90	98	...	...
	Hamblen	...	93	88	...	80	70	75	78	100	93	83	88	...	...	...
	K East Tennessee Val- ley.	Grainger	...	90	88	100	95	93	88	98	90	98
Union		...	70	85	...	70	90	90	80	...	...	...	50	80	...	...
Jefferson		...	100	100	...	100	100	100	...	...	...	95	95	...	...	...
Knox		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Roane		...	90	85	...	80	85	40	60	30	70	...	40	...	...	...
Loudon		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
McMinn		...	80	75	88	...	88	75	80	88	...	...	83	...	...	...
Meigs		...	80	65	80	...	83	90	75	75	...	...	70	85	...	...
Bradley		...	68	85	65	...	80	85	83	90	78	50	70	68	95	...	
James		...	80	70	...	75	90	75	85	70	50	75	70	...	...	...
L Valley of East Ten- nessee and Unaka Re- gion.		Johnson	...	75	85	70	85	100	95	38	98	95
		Carter	...	100	85	100	85	90	95	100	95	100	95	100	95	100	...
	Unicoi	...	80	75	90	85	85	65	100	90	90	...	75	90	...	...
	Greene	...	75	93	85	88	80	90	83	...	...	...	85	93	...	...
	Cocke	...	88	90	80	90	83	85	78	...	...	...	83	90	90	...
	Sevier	...	...	80	85	85	95	95	85	83	...	...	85	93	...	...
	Blount	...	80	88	90	85	85	85	88	85	90	90	88	...	...	...
	Monroe	...	65	83	80	75	80	70	83	85	80	100	65	...	...	...
	Polk	...	80	80	95	88	100	88	100	87	75	...	...	...	...	...
	Average	73	80	78	86	79	89	82	76	83	89	82	76	83	89	82	...

NOTICE TO NEWSPAPER PUBLISHERS.

Several thousand copies of *Tennessee Agriculture* will be issued each month, but not enough, on account of limited appropriations for this work, to give it as wide circulation as desired. Therefore the Department of Agriculture asks the cooperation of the newspapers of the State in their liberal use of any or all the matter in the bulletins.

PUBLICATIONS OF DEPARTMENT OF AGRICULTURE.

The following publications have been issued by the Department of Agriculture and will be sent, until supply is exhausted, when request is accompanied by necessary postage:

Tennessee Agriculture. (Monthly Bulletin.) Vol. 1, No. 1. 32 pages.
Vol. 1, No. 2. 48 pages. Issued June 1, 1912. 2 cents.

Facts About Tennessee. Issued December, 1911. 52 pages. 2 cents.

Map of Tennessee. Showing Agricultural and Mineral Resources, Population and Educational Statistics, with Description of Counties. Issued 1912. 2 cents.

Handbook of Agricultural Laws of Tennessee. Issued October, 1911. 68 pages. 2 cents.

Tabulated Analyses of Commercial Fertilizers. Issued January, 1912. 50 pages. 2 cents.

Seed Bulletin. No. 1. Issued March, 1912. 18 pages. 1 cent.

Proceedings Tenth Annual Session Middle Tennessee Farmers' Institute. Dec. 5-7, 1911. 160 pages. 5 cents.

Laws and Rules and Regulations Governing Live Stock Sanitary Control Work in Tennessee. Issued April, 1912. 32 pages. 2 cents.

Relation of the County Health Officer to the State Department of Agriculture. By George R. White, M.D., D.V.S. 12 pages. 1 cent.

Concentrated Commercial Feeding Stuffs. Bulletin No. 2. May 15, 1911. 96 pages. 2 cents.

Biennial Report Tennessee Department of Agriculture. 1909-1910. 392 pages. 10 cents.

Biennial Report Tennessee Department of Agriculture. 1907-1908. 250 pages. 8 cents.

Proceedings Thirteenth Annual Convention Association of Agricultural Workers of the South, at Nashville, Dec. 11-13, 1911. 58 pages. 2 cents.

Davidson County, Tennessee. Descriptive booklet. 32 pages. 2 cents.

Rhea County, Tennessee. Descriptive Booklet. 32 pages. 2 cents.

Scott County, Tennessee. Descriptive Booklet. 32 pages. 1 cent.

Warren County, Tennessee. Descriptive Booklet. 16 pages. 1 cent.

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IN THIS ISSUE:

The State Fair : Awards
in Agriculture, Live Stock and Poultry.

Farm Boys' Encampment

Tennessee Live Stock Breeders

Improve Your Seed Corn



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THE STATE FAIR.

The seventh Tennessee State Fair, and the second under the management of the State, was held at Nashville the week of September 16-21. The best of Tennessee's productions in crops and live stock were on exhibition, together with splendid exhibits from many other States.

The formal opening of the Fair was held in the Woman's Building on Monday morning, with invocation by Dr. William Lunsford, and a short address by Commissioner of Agriculture T. F. Peck, Chairman of the Board of Trustees.

Monday witnessed the beginning of demonstration work in the various departments. The many thousand exhibits were well arranged and included everything from the farm, the factory and the home that enters into and makes modern life comfortable.

The free amusement features were the best that have been obtained for the State Fair, and they were witnessed each afternoon and night by interested thousands. The Midway furnished the amusement-seekers varied means of passing the time.

Good trotting and pacing races were put on each afternoon except Wednesday and Saturday, when rain prevented.

Some of the horses shown on Monday by the Memphis Matinee Club will be future stars on the Grand Circuit, as the Memphis Club turns out at least one champion each year.

Monday night the Nashville Automobile Club had charge of the automobile show and parade, which was participated in by a large number of cars, and was a very interesting show.

Music for the Fair was furnished by the First Regiment Band of Nashville.

The following special days were observed:

Monday—Middle Tennessee Day; Fraternal Order Day; Press Day; Automobile Day.

Tuesday—West Tennessee Day; Woman's Day.

Wednesday—Nashville Day; East Tennessee Day; Good Roads Day; Boys' Corn Club Day.

Thursday—Commercial and Social Club Day; Kentucky Day; Printers' Cost Congress Day.

Friday—Farmers' Institute Day; Confederate Veterans' Day; Alabama Day.

Saturday—Children's Day; Girls' Day; Traveling Men's Day; Labor Organization Day.

Notwithstanding two rainy days—Wednesday and Saturday—the

attendance for the week exceeded that of any previous Fair. The attendance on Thursday was the largest in the history of the Fair.

Saturday was Children's Day, and would have witnessed one of the largest crowds of the week but for the hard rain which came.

Concerning the Fair, the following statements were made by the chief officials:

Capt. T. F. Peck: "In my opinion this has been a most successful Fair. The people are back of us, and we know that, with decent weather, we can depend on them. Despite the rain, our receipts exceed those of last year, and we have proved that the State can stage a successful Fair."

Secretary J. W. Russwurm: "Yes, the rain proved to be a heavy handicap, but in spite of it we have had a great Fair. Today would have been one of our biggest days, but the rain kept the children from coming. We have been given much encouragement and are anxiously awaiting next year, when we'll again show 'em that Tennessee knows how."

Publicity Agent Rob Roy: "There may have been bigger fairs held, but not in the South. Not even the rain on two days and two nights could prevent it from breaking previous records for gate receipts. We have come out ahead of the game and have obtained a store of experience which will enable us to put on a still better fair next year."

LIVE STOCK.

Awards were made in the live stock exhibits as follows:

DAIRY CATTLE.

Department D, Class No. 2, Lot No. 24, bull, 3 years old or over—Prince Creamelle DeKol, Dener Bros., Camp Chase, O., first; Sir Hartog Fayne S. P. Scherer, Fishers, Ind., second.

Lot No. 26, bull, senior yearling—Wayne De Vins Kamdyke, Dener Bros., Camp Chase, O., first.

Lot No. 27, bull, junior yearling—Clothilda Dinasa Kamdyke, Dener Bros., Camp Chase, O., first.

Lot No. 28, bull, senior calf—Moore Mutual Kamdyke, W. S. Dixon, Brandon, Wis., first; Calico Jim DeKol, Dener Bros., Camp Chase, O., second.

Lot No. 29, bull, junior calf—Sharp 2d Colanttit Johanna, Dener Bros., Camp Chase, O., first.

Lot No. 30, cow, 3 years old or over—Allie May Nelson, W. S. Dixon, Brandon, Wis., first; Rosa Bonheur Dulciana, Dener Bros., Camp Chase, O., second; Well Mussee, Dener Bros., Camp Chase, O., third.

Lot No. 31, heifer, 2 years old and under 3—Aggie Johanna Beauty, Dener Bros., Camp Chase, O., first; Johanna De Vins 3d, Dener Bros., second.

Lot 32, heifer, senior yearling—Inspiration Deuhha, Dener Bros., Camp Chase, O., first.



A PRIZE WINNER.

Lot No. 33, heifer, senior yearling—Hitton DeKol Maid, Dener Bros., Camp Chase, O., first.

Lot No. 34, heifer, senior calf—W. S. Dixon, Brandon, Wis., first; Egotistine DeKol Girl, Dener Bros., Camp Chase, O., second; Belle Time Johanna, Dener Bros., third.

Lot No. 35, heifer, junior calf—W. S. Dixon, Brandon, Wis., first; Dener Bros., Camp Chase, O., second and third.

Lot No. 36, sweepstakes, champion bull, 2 years old or over—Prince Creamelle DeKol, Dener Bros., Camp Chase, O.

Lot No. 37, champion bull under 2 years, sweepstakes—Morris Mutual Klondike, W. S. Dixon, Brandon, Wis.

Lot No. 40, grand champion bull—Morris Mutual Klondike, W. S. Dixon, Brandon, Wis.

Lot No. 42, aged herd—Won by Dener Bros., Camp Chase, O.

Lot No. 43, young herd—Won by Dener Bros., Camp Chase, O.

Lot No. 44, calf herd—First and second won by Dener Bros., Camp Chase, O.

Lot No. 45, get of sire—First and second won by Dener Bros., Camp Chase, O.

HOLSTEIN FRIESIAN.

Champion female, 2 years old or over—W. S. Dixon; also winner of champion female under 2 years, grand champion bull, grand champion female.

ABERDEEN-ANGUS.

Bull, 3 years old and over—First, J. Garrett, Tollions; second, Burkitt Farm.

Bull, 2 years old and under 3—First, J. M. Castle & Son, Wytheville, Va.

Bull, senior yearling—First and second, Burkitt Farm, Antioch, Tenn.

Bull, junior yearling—First, J. M. Castle & Son; second, J. G. Tollins, Farmingdale, Ill.; third, Burkitt Farm.

Bull, senior calf—First, J. G. Tollins; second, Burkitt Farm.

Bull, junior calf—First, J. M. Castle & Son; second, J. G. Tollins; third, Burkitt Farm.

Cow, 3 years old and over—First, J. G. Tollins; second, J. M. Castle & Son; third, Burkitt Farm.

Heifer, 2 years old and under 3—First, J. M. Castle & Son; second, J. G. Tollins; third, Burkitt Farm.

Heifer, junior yearling—First and second, J. G. Tollins; third, Burkitt Farm.

Heifer, senior calf—First and second, J. G. Tollins; third, J. M. Castle & Son.

Heifer, junior calf—First and second, J. G. Tollins; third, J. M. Castle & Son.

Champion bull, over 2 years old—J. G. Tollins.

Champion bull, under 2 years old—J. G. Tollins.

Champion female, 2 years old and over; champion female, 2 years old; grand champion bull, grand champion female—J. G. Tollins.

Aged herd—First, J. G. Tollins; second, J. M. Castle & Son; third Burkitt Farm.

Young herd—J. G. Tollins.

Calf herd—First and second, J. G. Tollins; third, J. M. Castle & Son.

Get of sire—First and second, J. G. Tollins; third, J. M. Castle & Son.

Produce of cow—First, second and third, J. G. Tollins.

TENNESSEE ABERDEEN-ANGUS.

Bull, 3 years old and over—Burkitt Farm won all entries.

JERSEY CATTLE.

Awards were announced in the Jersey class of the dairy cattle division of the Tennessee State Fair. The competition in Jerseys was unusually strong, and the winner of each ribbon fought for the place. The awards follow:

Bull, 3 years and over—First, Golden Jolly Noble, James L. Cooper, Nashville; second, Rochetts Golden Lad, Cleburne Farm, Spring Hill, Tenn.; third, Dunip Jolly Lad, J. F. Boyd.

Bull, 2 years old and under 3—First, Jersey Isle Stock Farm, Rushville, Ind.; second, Raleigh Noble, Dr. W. G. Ewing, Nashville; third, Majesty's Oxford King, W. S. Dixon, Brandon, Wis.

Bull, senior yearling—First, T. A. Keller, Nashville; second, W. S. Dixon; third, Jersey Isle Stock Farm.

Bull, junior yearling—First, W. S. Dixon; second, Allen Dale Farm, Shelbyville, Ky.; third, John F. Boyd, Rushville, Ind.

Bull, senior calf—First, W. S. Dixon; second, Percy Brown, Spring Hill, Tenn.; third, Cleburne Farm, Spring Hill, Tenn.

Bull, junior calf—First, Dr. W. G. Ewing; second, Gainbogr Oxford Duke, Jersey Isle Stock Farm; third, Orless' Oxford Majesty, W. S. Dixon.

Cow, 3 years and older—First, Young Rosie, Cleburne Farm; second, Lord Alder's Prince, Jersey Isle Farm; third, Maurice's Lass, W. S. Dixon.

Heifer, 2 years old and under 3—First, John F. Boyd, Rushville, Ind.; second, W. S. Dixon, Brandon, Wis.; third, W. G. Ewing, Brentwood.

Heifer, senior yearling—Golden Oxford, W. S. Dixon; second, Mabel Lady Alden, Dr. W. G. Ewing; third, Plymouth Lad's Princess, Jersey Isle Stock Farm.

Heifer, junior yearling—First, Jolly Nobel's Spontaine, Dr. W. G. Ewing; second, Stockwell Fountaine B, Percy Brown, Spring Hill; third, Paulas-Oxford Ixia, W. S. Dixon.

Heifer, junior calf—First, Raleigh's Noble Duchess, Dr. W. G. Ewing; second, Oxford Plymouth, Jersey Isle Stock Farm; third, Rochester Fawn Duchess, Cleburne Farm.

Young herd—First, Dr. W. G. Ewing; second, W. S. Dixon; third, Allen Dale Farm.

HEREFORD CATTLE.

The following awards have been announced in the Hereford cattle class of the beef cattle division:

Bull, 3 years old and over—First, British, Jr., Gitten Bros., Eminence, Ky.; second, Bean Java, Lile Bros., Leitchfield; third, Tennessee Protector, W. P. Prater, Christian, Tenn.

Bull, 2 years and under 3—First, Prince Rupert 39, Luce & Moxley, Shelbyville, Ky.; second, Bean Prodigal, Giltner Bros., Eminence, Ky.; third, Fairfax 16, Lile Bros., Litchfield, Ky.

Bull, senior yearling—First, Prince Rupert 44, Luce & Moxley; second, Bean Fairfax, Lile Bros.; third, Prince Rupert 45, B. B. Gillespie & Son, Gallatin, Tenn.; fourth, Prince Baby, B. B. Gillespie & Son.

Bull, senior calf—First, Prince Rupert 53, Luce & Moxley; second, Prince Rupert 50, Luce & Moxley; third, Bean March, Giltner Bros.; fourth, Bean Standard, Giltner Bros.

Bull, junior calf—First, Prince Real, Luce & Moxley; second, Bean Acrobat, Giltner Bros.; third, Bean Fairfax, Lile Bros.; fourth, Champ B. B. Gillespie & Son.

Cow, 3 years old or over—First, Princess R., Luce & Moxley; second, Dailey Fairfax, Lile Bros.; third, Adell Acrobat, Giltner Bros.; fourth, Folicia, B. B. Gillespie & Son.

Heifer, 2 years old and under 3—First, Princess R., Luce & Moxley; second, British Blessing, Giltner Bros.; third, Dale Fairfax, Lile Bros.; fourth, Gladys, B. B. Gillespie.

Heifer, senior yearling—First, Princess R., Luce & Moxley; second, Florence Acrobat, Giltner Bros.; third, Bethel Bean Donald, Lile Bros.; fourth, Charlotte, Gillespie & Son.

Heifer, junior yearling—First, Bean Dolly, Giltner Bros.; second, Princess R., Luce & Moxley; third, Queen Estill, Giltner Bros.; fourth, Lady B. Fairfax, Lile Bros.

Heifer, senior calf—First, Giltner Bros.; second, Luce & Moxley; third and fourth, Lile Bros.

Heifer, junior calf—First, B. B. Gillespie & Son; second, Gilmore Bros.; third, Lile Bros.; fourth, Gillespie & Son.

Champion bull, 2 years old or over—Prince Rupert 39, Luce & Moxley.

Champion bull, under 2 years—Prince Rupert 52, Luce & Moxley.

Champion female, 2 years old or over—Princess R. 10, Luce & Moxley.

Champion female, under 2 years—Florence Acrobat 3, Giltner Bros.

Grand champion bull—Prince Rupert 39, Luce & Moxley.

Grand champion female—Princess R. 10, Luce & Moxley.

HERDS AND GROUPS.

Aged herd—First, Luce & Moxley; second, Giltner Bros.; third, Lile Bros.

Young herd—First, Luce & Moxley; second, Giltner Bros.; third, Lile Bros.

Calf herd—First, Luce & Moxley; second, Giltner Bros.; third, Lile Bros.

Get of sire—First and second, Luce & Moxley; third, Giltner Bros.

Produce of cow—First, Luce & Moxley; second, Giltner Bros.; third, Luce & Moxley.

TENNESSEE HEREFORDS.

Bull, 3 years old and over—Tennessee Protector, U. P. Pratter, first.

Bull, 2 years old and under 3—First, Jim Jeffries, Gillespie Bros.

Bull, 1 year old and under 2—First and second, Gillespie Bros.; third, Johnson, U. P. Pratter.

Bull, under 1 year—First, Champ, Gillespie; second, Prince Henry, Gillespie; third, Obiner, U. P. Pratter.

Cow, 3 years old and over—First, B. B. Gillespie & Son; second and third, U. P. Pratter.

Heifer, 2 years old and under 3—First, Gladys, B. B. Gillespie & Son.

Heifer, 1 year old and under 2—First and second, B. B. Gillespie & Son; third, U. P. Pratter.

Heifer, under 1 year old—First and second, B. B. Gillespie & Son; third, U. P. Pratter.

Champion bull—B. B. Gillespie & Son.

Champion female—B. B. Gillespie & Son.

B. B. Gillespie & Son won first in aged herd, young herd and calf herd.

HOGS.

BERKSHIRES.

Boar, 2 years and over—The Grandson, U. Y. C. Hume, Huntsville, Ala., first; Baron Premier, A. H. Debardeleben, Cave Springs, Ala., second; Star Master, Duke, U. Y. C. Hume, third.

Boar, 18 months and under—Lucas & Gill, Huntland, Tenn., first; Full Value, U. Y. C. Hume, Huntsville, Ala., second.

Boar, 12 months and under 18—Lennington, Lucas & Gill, Huntland, Tenn., first; Peerless Premier, Jr., Elendorf Farm, Lexington, Ky., second; Champion Royal, U. Y. C. Hume, Huntsville, Ala., third.

Boar, 6 months and under 12—Premier, Brookhaven Farm, Nashville, first; Elendorf Champion, Elendorf Farm, Lexington, Ky., second; Longfellow Kaiser, A. H. Debardeleben, Cave Springs, Ala., third.

Boar, under 6 months—Johnnie's Jolly Lad, Lucas & Gill, first; Elendorf Master Premier, Elendorf Farm, second; Southern Governor, A. H. Debardeleben, third.

Sow, 2 years and over—Raymond Duchess, Lucas & Gill, first; Artful Belle, U. Y. C. Hume, second; Value Lady Lee, U. Y. C. Hume, third.

Sow, 18 months old—Peerless Victor Belle, Elendorf Farm, first; Value Lady Combination, U. Y. C. Hume, second; Star Duchess, U. Y. C. Hume, third.

Sow, 12 months old—Longfellow's Royal Lady, Elendorf Farm, first; Star Belle, U. Y. C. Hume, second; Lucindy, F., Lucas & Gill, third.

Sow, 6 months old—Zenia of Brookhaven, Brookhaven Farm, first; Silver Tips, Elendorf Farm, second; Artful Lucindy, Brookhaven Farm, third.

Sow, under 6 months—Roseland Empress, Lucas & Gill, first; Primrose, U. L. Oldham, second; Roseland Empress, Lucas & Gill, third.

Senior champion boar—The Grandson, U. Y. C. Hume.

Junior champion boar—Johnnie's Jolly Lad, Lucas & Gill.

Grand champion boar—The Grandson, U. Y. C. Hume.

Champion sow under 1 year—Ravenwood Duchess, Lucas & Gill.

Junior champion sow—Zenia of Brookhaven, Brookhaven Farm.

Grand champion sow—Zenia of Brookhaven, Brookhaven Farm.

Boar and three sows—Herd, U. Y. C. Hume, first; Lucas & Gill, second; Elendorf Farm, third.

Boar and three sows—Herd, Brookhaven Farm, first; Lucas & Gill, second; Elendorf Farm, third.

Boar and three sows—Herd, Brookhaven Farm, first; Elendorf Farm, second; W. L. Oldham, third.

Boar and three sows—Herd, Brookhaven Farm, second; Lucas & Gill, third.

DUROC-JERSEYS.

Boar, 2 years old and over—First, Mahon Bros., Osborn, O.; second, Cotta & Williams, Galesburg, Ill.; third, S. H. Stanley & Son, Newport, Tenn.

Boar, 18 months and under 24—First, Mahon Bros.; second, Harris & Daniel, Morganfield, Ky.; third, Gillock & Son, Nashville, Tenn.

Boar, 12 months and under 18—First, S. H. Stanley & Son; second, Mahon Bros.; third, McKee Bros., Versailles, Ky.

Boar, 6 months and under 12—First, Mahon Bros.; second, Stanley & Son; third, Harris & Daniel.

Boar, under 6 months—First, Harris & Daniel; second, S. H. Stanley & Son; third, McKee Bros.

Cow, 2 years and over—First and second, Mahon Bros.; third, Harris & Daniel.

Sow, 18 months and under 24—First and second, Mahon Bros.; third, Harris & Daniel.

Sow, 12 months and under 18—First, second and third, Mahon Bros.

Sow, 6 months and under 12—First, Mahon Bros.; second and third, McKee Bros.

Grand champion boar, 1 year old and over—First, S. H. Stanley & Son, Newport, Tenn.

Grand champion boar, under 1 year—Mahon Bros.

Champion sow, 1 year old and over—Mahon Bros.

Champion sow, under 1 year—Mahon Bros.

Grand champion boar—S. H. Stanberry.

Grand champion sow—Mahon Bros.

Boar and three sows, all over 1 year—First and second, Mahon Bros.; third, S. H. Stanley & Son.

Boar and three sows, all over 3 years, bred by exhibitor—First and second, Mahon Bros.; third, S. H. Stanley & Son.

Boar and sow, under 3 years—First, Mahon Bros.; second, Harris & Daniel; third, S. H. Stanberry.

Four animals, either sex or any age (get of boar)—First and second, Mahon Bros.; third, Harris & Daniel.

Four animals, any age or sex (produce of sow)—First, Harris & Daniel; second, S. H. Stanley & Son; third, Gillock & Son.

Best Duroc-Jersey herd, under 1 year old, consisting of one boar and three sows, bred and owned by exhibitor—First and second, S. H. Stanley & Son; third, Gillock & Son.

POLAND CHINAS.

Awards were announced in the Poland China class in the great hog display at the State Fair as follows:

Boar, 2 years old and over—First, T. E. Brown, Murfreesboro.

Boar, 18 months and under 24—First, Shepard & Osborn and Beatty Bros., Columbus, O.; second, James McSpadden, Jr., Hickory Valley, Tenn.

Boar, 12 months and under 18—First, Keepsake, Jr., Shepard & Osborn and Beatty Bros., Columbus, O.; second, B. L. Perfection the Second, J. A. McSpadden, Jr., Hickory Valley; third, Gold Wine, Shepard & Osborn and Beatty Bros., Columbus, O.

Boar, 6 months and under 12—First, Monteagle, J. M. McSpadden, Jr.; second, Victor Starr, Shepard & Osborn and Beatty Bros.; third, On Time, Shepard and Osborn and Beatty Bros.

Boar, under 6 months—First, Spell Binder's Victor, Shepard & Osborn and

Beatty Bros.; second, Count Noble, J. M. McSpadden, Jr.; third, Star Light, Shepard & Osborn and Beatty Bros.

Sow, under 2 years—First, Miss Harvester, J. M. McSpadden, Jr., second, Myrtle, Shepard & Osborn and Beatty Bros.

Sow, 18 months and under 24—First, Carnation, Shepard & Osborn and Beatty Bros.; second, May, J. M. McSpadden, Jr.; third, Lady Bantam, J. M. McSpadden, Jr.

Sow, 12 months and under 18—First, Beauty Guard, Shepard & Osborn and Beatty Bros.; second, Charity Comptroller, J. M. McSpadden, Jr.; third, Beauty, Shepard & Osborn and Beatty Bros.

Sow, 6 months and under 12—First, Model Lady, J. M. McSpadden, Jr.; second, Our Choice, Shepard & Osborn and Beatty Bros.; third, Choice Goods, Shepard & Osborn and Beatty Bros.

Sow, under 6 months—First, Village Queen, Shepard & Osborn and Beatty Bros.; second, Harvester Lady the First, J. M. McSpadden, Jr.; third, Village Bell, Shepard & Osborn and Beatty Bros.

Champion boar, 1 year and over—First, Highland Chief, Shepard & Osborn and Beatty Bros.

Champion boar, under 1 year—Monteagle, J. M. McSpadden, Jr.

Champion sow, 1 year old or over—Beauty Guard, Shepard & Osborn and Beatty Bros.

Champion sow, under 1 year—Model Lady, J. M. McSpadden.

Grand champion boar—Highland Chief, Shepard & Osborn and Beatty Bros.

Grand champion sow—Beauty Guard, Shepard & Osborn and Beatty Bros.

Herd, boar and three sows, all over 1 year old—First, Shepard & Osborn and Beatty Bros.; second, H. M. McSpadden, Jr.

Boar and three sows, over 1 year old, bred by exhibitor—Shepard & Osborn and Beatty Bros.

Boar and three sows, under 1 year—First, J. M. McSpadden, Jr.; second and third, Shepard & Osborn and Beatty Bros.

Boar and three sows, under 1 year, bred by exhibitor—First, Osborn & Beatty; second, J. M. McSpadden; third, T. E. Brown.

GET OF BOAR.

Four animals, either sex, any age—First, J. M. McSpadden, Jr.; second and third, Shepard & Osborn and Beatty Bros.

Produce of sow, four animals, any age or sex—First and second, Shepard & Osborn and Beatty Bros.; third, J. M. McSpadden, Jr.

SHEEP.

SOUTHDOWNS.

Lot 1—Ram, 2 years old and over, first, second and third, A. M. Casey, Maysville, Ky.

Lot 2—Ram, 1 year old and under 2, first, second and third, A. M. Casey, Maysville, Ky.

Lot 3—Ram under 1 year old, first, second and third, A. M. Casey, Maysville, Ky.

Lot 4—Ewe, 2 years old and over, first and second, A. M. Casey, Maysville, Ky.; third, John Barber, Castalian Springs.

Lot 5—Ewe, 1 year old and under 2, first, second and third, A. M. Casey, Maysville, Ky.

Lot 6—Ewe under 1 year old, first, second and third, A. M. Casey, Maysville, Ky.

Lot 7—Sweepstakes champion ram, first, A. M. Casey, Maysville, Ky.

Lot 8—Champion ewe, first, A. M. Casey, Maysville, Ky.

Lot 9—Flock, first, A. M. Casey, Maysville, Ky.

Lot 10—Pen of lambs, first and second, A. M. Casey, Maysville, Ky.

OXFORD DOWNS—INDIVIDUALS.

Lot 22—Ram, 2 years old or over, first, J. C. Williamson & Son, Xenia, O.; second, H. Homer Jobe & Co., Xenia, O.

Lot 23—Ram, 1 year old and under 2, first, J. C. Williamson & Son, Xenia, O.; second, H. Homer Jobe & Co., Xenia, O.

Lot 24—Ram under 1 year old, first, J. C. Williamson & Son, Xenia, O.; second, H. Homer Jobe, Xenia, O.

Lot 25—Ewe, 2 years old and over, first, J. C. Williamson & Son, Xenia, O.; second, H. Homer Jobe & Co., Xenia, O.

Lot 26—Ewe, 1 year and over, first, J. C. Williamson & Son, Xenia, O.; second, H. Homer Jobe & Co., Xenia, O.

Lot 27—Ewe under 1 year old, first, J. C. Williamson & Son, Xenia, O.; second, H. Homer Jobe, Xenia, O.

Lot 28—Sweepstakes champion ram, first, J. C. Williamson & Son, Xenia, O.

Lot 29—Sweepstakes champion ewe, first, J. C. Williamson & Son, Xenia, O.

Lot 30—Flock, first, J. C. Williamson & Son, Xenia, O.; second, H. Homer Jobe & Co., Xenia, O.

Lot 31—Pen of lambs, first, J. C. Williamson & Son, Xenia, O.; second, H. Homer Jobe & Co., Xenia, O.

HAMPSHIRE.

Walnut Hall Farm, Doneval, Ky., won first, second and third in all Hampshire entries. The lots were as follows: Ram, 2 years old and over; ram, 1 year and under 2; ram, under 1 year; ewe, 2 years and over; ewe, 1 year and under 2; ewe, under 1 year; champion ram; champion ewe; flock and pen of lambs.

SHROPSHIRE.

Ram, 2 years old and over—First, Auoka Farm, Waukesha, Wis.; second, Jess C. Andrews, West Point, Ind.; also the third.

Ram, 1 year old and under 2—First, Auoka Farm; Jess C. Andrews, second and third.

Ram, under 1 year old—First, Auoka Farm; second and third, Jess C. Andrews.

Ewe, 2 years old and over—First, Auoka Farm; second and third, Jess C. Andrews.

Ewe, 1 year old and under 2—First, Auoka Farm; second and third, Jess C. Andrews.

Ewe, under 1 year old—First and third, Jess C. Andrews; second, Auoka Farm.

Champion ram—Auoka Farm.

Champion ewe—Jess C. Andrews.

Flock—First, Auoka Farm; second and third, Jess C. Andrews.

Pen of lambs—First, Jess C. Andrews; second, Auoka Farm,

DORSETS.

Ram, 2 years old and over—First and second, Nash Bros., Tipton, Ind.

Ram, 1 year old and under 2—First, Howard M. Gower, Clarksburg, W. Va.; second, Nash Bros.

Ram, under 1 year old—First, second and third, Nash Bros.

Ewe, 2 years old and over—First, Howard M. Gower; second and third, Nash Bros.

Ewe, 1 year old and under 2—First and third, Nash Bros.; second, Howard M. Gower.

Ewe, under 1 year—First, Howard M. Gower; second and third, Nash Bros.

Grand champion ram—Howard M. Gower.

Grand champion ewe—Nash Bros.

Flock—First, Howard M. Gower; second and third, Nash Bros.

Pen of lambs—First, Howard M. Gower; second and third, Nash Bros.

CHEVIOTS.

G. W. Parnell, of Windgate, Ind., was the only entrant in the Cheviot class, and took all prizes. He had a full exhibit, including each of the lots catalogued.

MERINOS.

Ram, 2 years old and over—First, H. H. Jobe & Co.; second, J. C. Williamson & Son; third, H. H. Jobe & Co., all of Xenia, O.

Ram, 1 year old and under 2—First and third, H. H. Jobe & Co.; second, J. C. Williamson & Son.

Ram, under 1 year—First and second, H. H. Jobe & Co.; second, J. C. Williamson & Son.

Ewe, 2 years old and over—First and third, H. H. Jobe & Co.; second, J. C. Williamson & Son.

Ewe, 1 year old and under 2—First and third, H. H. Jobe & Co.; second, J. C. Williamson & Son.

Ewe, under 1 year—First and second, H. H. Jobe & Co.; third, J. C. Williamson & Son.

Champion ram—H. H. Jobe & Co.

Champion ewe—H. H. Jobe & Co.

Flock—First and third, H. H. Jobe & Co.; second, J. C. Williamson & Son.

Pen of lambs—First and third, H. H. Jobe & Co.; second, J. C. Williamson & Son.

COTSWOLD.

Ram, 2 years old and over—First and second, Auoka Farm, Waukesha, Wis.; third, M. H. McNeill, New Richmond, O.

Ram, 1 year old and under 2—First and second, Auoka Farm; third, M. H. McNeill.

Ram, under 1 year old—First and second, Auoka Farm.

Ewe, 2 years old or over—First and second, M. H. McNeill; third, Auoka Farm.

Ewe, 1 year old and under 2—First and third, Auoka Farm; second, M. H. McNeill.

Ewe, under 1 year old—First and second, Auoka Farm; third, M. H. McNeill.
 Champion ram—Auoka Farm.
 Champion ewe—Auoka Farm.
 Flock—First and third, Auoka Farm; second, M. H. McNeill.
 Pen of lambs—Auoka Farm.

ANGORA GOATS.

Bucks, 2 years old and over—First, C. A. Thomas & Son, Oakland, Ky.; second, T. R. Love, Gallatin; third, R. E. L. Parmen.

Buck, 1 year old and under 2—First, C. A. Thomas & Son; second, T. E. Love; third, R. E. L. Parmen.

Buck kid, under 1 year old—First and second, C. A. Thomas & Son; third, T. R. Love.

Ewe, 2 years old and over—First and second, C. A. Thomas & Son; third, T. R. Love.

Ewe, 1 year old and under 2—First and second, C. A. Thomas & Son; third, R. E. L. Parmen.

Ewe kid, under 1 year old—First and second, C. A. Thomas & Son; third, T. R. Love.

Exhibitors' flock, one buck, any age; one ewe over 2 years and one ewe under two years, and one ewe kid under one year—First, C. A. Thomas & Son; second, T. R. Love.

Exhibitors' pen, two buck kids and two ewe kids, the get of one buck, all bred by exhibitor—First, C. A. Thomas & Son; second, T. R. Love.

Breeders' pen, two buck kids and two ewe kids, the get of one buck, all bred by exhibitor—First, C. A. Thomas & Son; second, T. R. Love.

Breeders' pen of four kids, either sex, get of one buck, all bred by exhibitor, silver cup given by American Angora Breeders' Association—C. A. Thomas & Son, winner.

HORSES.

Class 1, Lot 3—Gollett McEwen, Jas. Thomas, Fair Grounds, first; bay colt, J. P. Russell, Jr., Stevenson, Ala., second; bay colt, Love & Miller, Paris, third.

Class 11, Lot 6, 11 entries—Iray Sellus, Ray Sellus, Lebanon, first; Kate S., Mrs. W. H. Jones, Columbia, second; Stamboul Princess, Mrs. W. H. Jones, third.

Class 2, Lot 12—John Early, Nashville, first; McEwen Gentry, J. N. Lee, Nashville, second.

Class 2, Lot 17—Willie Coffee, Mrs. W. H. Jones, Columbia, first; bay filly, J. P. Russell, Stevenson, Ala., second.

Class 3, Lot 25, 10 entries—J. O. Kittrell, Nashville, first; W. F. H. Bennett Livery Co., Nashville, second; Kate S., Mrs. W. H. Jones, third.

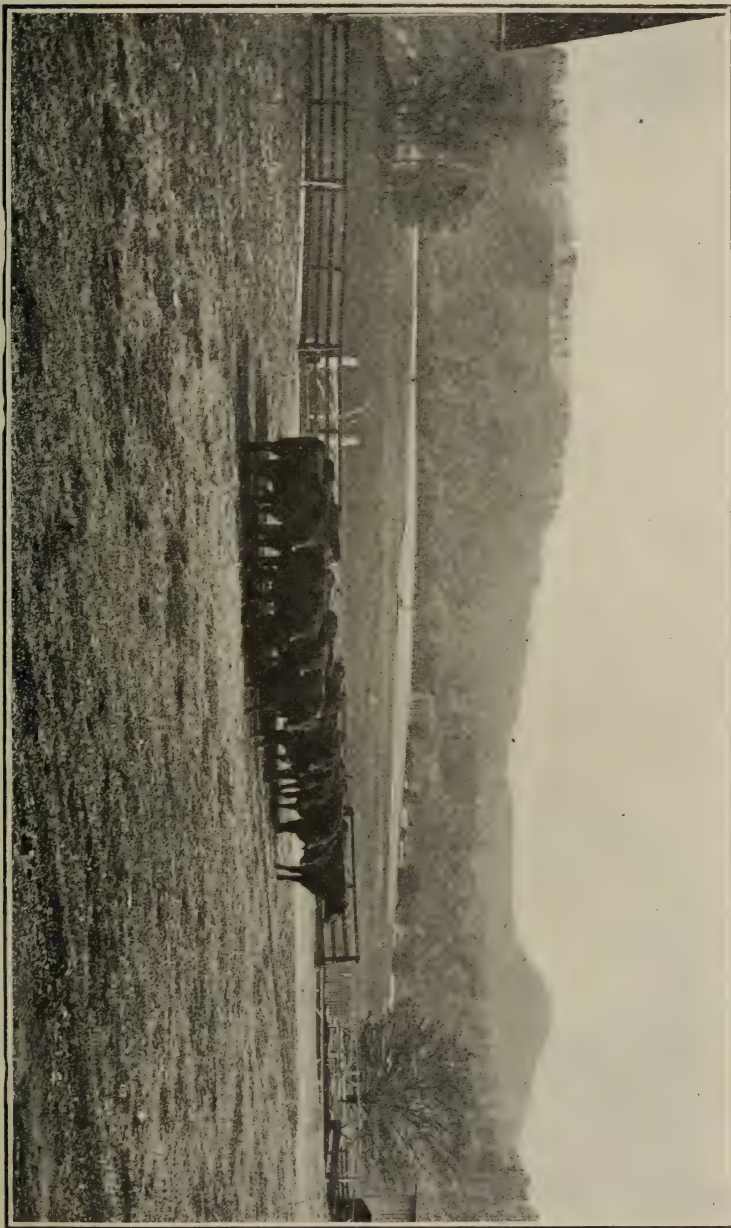
Class 4, Lot 31—King James, Miss Nannie Overton, first.

Class 4, Lot 35—Lady Dan, Barham Sons & Butler, Milan, first; Delldare, Grissam & Chamberlain, Lebanon, second.

Class 4, Lot 48—Nellie, W. C. Cockrill, Nashville, first.

Class 8, Lot 69—Belveta, Bushard Bros., Nashville, first; Eileen, Bushard Bros., second.

Class 10, Lot 99—King Rhythmic, C. A. Love and Cooper Miller, Paris, first.



ON A STOCK FARM.

HARNESS HORSES.

Stallion, 3 years and under 4—First, Jas. Thompson, city; second, Barham Sons & Butler, Milan, Tenn.; third, Barham Sons & Butler.

Foal 1912, either sex—First, W. A. Gray, Jr., Gallatin; second, Sam Borum; third, L. C. Thuss, Nashville.

Mare, 3 years and under 4—First, Barham Sons & Butler.

Gelding, any age—First, Thos. H. Ezell, Nashville; second, Jas. P. Gill, Clarksville; third, Pickens & Miller, Bell Buckle.

Pairs, mares or geldings, or mare and gelding, any age—First, Thos. H. Ezell; second, J. L. Barber and J. L. Rawls, Bowling Green, Ky.; third, Jas. P. Gill.

Pacers, stallion, 3 years and under 4—John Early, Nashville.

Heavy harness horses—Pairs, mares, first, The Derby Stables, Nashville; second, Jas. P. Gill; third, Mrs. W. H. Jones, Columbia.

MULES AND JACKS.

Department B, Class 1, Lot 1, mare mule, 4 years old or over—Dutch, Pickens & Miller, Bell Buckle, first; Longview Farm, Longview, Tenn., second; Longview Farm, third.

Lot No. 2, mare mules, 3 years old and under—Mandy, Pickens & Miller, Bell Buckle, first; Moss & Thomas, Gordonsville, second.

Lot No. 3, mare mules, 2 years old and under 3—Jude, J. T. Davis, Lewisburg, first; W. N. Griffin, Gallatin, second; W. N. Griffin, third.

Lot No. 4, mare mule, one year old and under—Queen, R. M. Lanier, Mt. Juliet, Tenn., first; Queen, R. M. Dickson, Shelbyville, Tenn., second; Queen Anne, R. M. Lanier, Mt. Juliet, third.

Lot No. 8, horse mule, 1 year old and under 2—Jack, R. W. Dickson, Shelbyville, first.

Lot No. 11, best mare mule, competition limited to prize winners in Lots 1 and 2—Pickens & Miller, Bell Buckle, first.

Horse mule, 2 years old and under 3—First, W. N. Griffin.

Horse mule, 1 year old and under 2—First, R. W. Dickson, Shelbyville.

Two-mule team—First, Pickens & Miller, Bell Buckle; second and third, Longview Farm.

Tennessee Mule Futurity, mare mule—First, J. W. Frost, Shelbyville; second, T. H. Ezell; third, R. M. Pierce, Hendersonville; fourth, W. M. Holt, Pegram Station; fifth, Wm. Gerst, Nashville.

Horse mule—First, T. P. Green, Shelbyville; second, H. H. McFarland, Mt. Juliet; third, T. H. Ezell; fourth, Jas. L. Gaines, Franklin; fifth, B. H. McFarland.

Produce of mare weighing 1,000 to 1,200 pounds, mare mule—First, R. W. Dickson; second, T. H. Ezell; third, W. M. Griffin, Gallatin; fourth, T. H. Ezell; fifth, B. H. McFarland, Nolensville.

Horse mule—First, Longview Farm.

Best foal, either sex—First, J. T. Davis; second, R. W. Dickson; fourth, T. H. Ezell.

Sire of winners—First, J. T. Davis; second, R. W. Dickson; third, E. F. Bright; fourth, T. H. Ezell.

Aged jacks—First, Rice, McWhirter & Carver, Mt. Juliet; second, T. H. Ezell; third, Gil Williamson, Giles County.

Tennessee Mule Futurity (produce of mare weighing under 1,000 pounds), horse mule, Longview Farm, Longview, Tenn.

Jack, 2 years old and under 3—First, Rice, McWhorter & Carver, Mt. Juliet; second, A. B. Harlan, Columbia; third, Thos. H. Ezell.

Jack, 1 year and under 2—First, H. T. Cawthorn, Mt. Juliet; second, J. C. Johnson, White Bluff; third, John W. Hewgley, Martha, Tenn.

Jack, under 1 year—First, H. T. Cawthorn; second, B. H. McFarland, Nolensville; third, E. K. Cook, Martha.

Jennet, 4 years and over—First, A. B. Harlan; second, T. H. Ezell; third, E. K. Cook.

Jennet, 3 years and under 4—First and second, B. H. McFarland.

Jennet, 2 years and under 3—A. B. Harlan.

Jennet, 1 year and under 2—T. H. Ezell.

Champion jack, any age—Rice, McWhorter & Carver.

Champion jennet, any age—A. B. Harlan.

SHETLAND PONIES.

Final awards have been made in the Shetland pony class at the State Fair, as follows:

Foaled 1912, either sex—First, Bessie, J. A. Butts, Nashville; second, Buster, J. A. Butts; third, Chestnut Girl, Frank & Covington, Nashville.

Mare, 2 years and under 3—First, Penwinkle, Overton Hall Farm, Nashville; second, Waukesha, Frank & Covington; third, Pride, Frank & Covington.

Tandem, ponies to count 75 per cent, vehicles and harness 25 per cent, mares, geldings, or mare and gelding—First, Norma and Flora, Mrs. E. L. Doak, Nashville.

Pony under 42 inches, under saddle—First, Mamie, J. A. Butts; second, Nile C, Edwin Murray; third, Japonica, Overton Hall Farm.

Stud colt, 1912—First, Buster, J. A. Butts; second, Frank & Covington entry; third, Mrs. Lusky's entry, Nashville.

Filly colt, 1912—First, Bettie, J. A. Butts; second, Frank & Covington entry; third, Overton Hall Farm entry.

These awards closed the judging of ponies.

Class 14, Lot 134—Dixie and Prince, John B. Sharpe, Nashville, first; double team, Frank & Covington, second.

Class 14, Lot 140—Sadie and Mamie, J. A. Butts, Nashville, first; Black Diamond and Blue Blazes, John B. Sharpe, Nashville, second; double team, Frank & Covington, Nashville, third.

Class 11, Lot 101—Dan, Bell & Darrell, first.

Class 11, Lot 104, 16 entries—Mamie, J. A. Butts, Nashville, first; Black Diamond, John B. Sharpe, Nashville, second; Blue Blazes, John B. Sharpe, third.

Class 12, Lot 124—Jacko, Miss Louise Tinsley, Nashville, first; John, James L. Gaines, Franklin, second.

Class 12, Lot 125—Flora and Connie, Mrs. E. L. Doak, Hermitage, first; Norma and Maud, Mrs. E. L. Doak, second.

Mare, 1 year old and under 2—First, Frank & Covington; second, Overton Hall Farm.

Saddle pony, ridden by boy or girl under 12 years of age; stallion any age—First, Edwin Murray, Nashville; second, Frank & Covington; third, John B. Sharpe.

Stallion, mare or gelding, any age, not to exceed 46 inches, in harness—First, Edwin Murray; second and third, John B. Sharpe.

Tandem, any age or sex—First, Frank & Covington.

PONIES OTHER THAN SHETLAND.

(Not to exceed 55 inches.)

Stallion, 3 years old or over—First, Mrs. E. L. Doak, Hermitage, Tenn.; second and third, C. M. Ward, city.

Stallion, in harness, any age, not over 42 inches—First, Edwin Murray; second, Frank & Covington; third, John B. Sharpe.

POULTRY.

In poultry the following awards were made:

S. C. WHITE ORPINGTONS.

Royal Poultry Yards, Dickson, Tenn., fifth cockerel; Park Poultry Yards, Nashville, Tenn., third and fifth cockerel, second and fifth hen, first cockerel, third and fourth pullet, second and third pen; Owen Farms, Vineyard Haven, Mass., first, second and fourth cock, second, third and fourth cockerel, first, third and fourth hen, first, third and fifth pullet, first and fourth pen; Mrs. L. L. Upson, Athens, Ga., fifth pen.

BUFF ORPINGTONS.

H. C. Henderson, Talladega, Ala., fourth and fifth pullet; Cozy Nook Orpington Farm, Lebanon, Tenn., fifth cockerel; Owen Farm, Vineyard Haven, Mass., first and fourth cock, second and third hen, first and second cockerel, first and third pullet, first and second pullet, first and third pullet, first and second pullet, first and second hen; Kenmore Poultry Farm, Nashville, Tenn., second and fifth cock, first hen, third and fourth cockerel, second pullet, third and fifth pen; Mrs. L. L. Upson, Athens, Ga., third cock, fourth pen; O. W. Thomas & Son, Nashville, Tenn., fourth and fifth hen.

BLACK ORPINGTONS.

Geo. O. Gatlin, Murray, Ky., fourth hen, fourth cockerel, fourth pullet; Owen Farms, Vineyard Haven, Mass., first cock, first hen, first and second cockerel, first and second pullet, first pen; Mrs. L. L. Upson, Athens, Ga., second cock, second hen, second pen; J. T. Adair, Louisville, third cock, third hen, third cockerel; third pullet.

ROSE COMB BLACK MINORCAS.

Royal Poultry Farm, Dickson, Tenn.

SINGLE COMB BLACK MINORCAS.

Royal Poultry Farm, Dickson, Tenn., first pen; J. C. Walker, Hartsville, Tenn., first cockerel, first, second, third and fourth hen.

S. C. WHITE LANGSHANS.

Royal Poultry Farm, Dickson, Tenn., first pen.

BUCKEYES.

W. F. Smith, Antioch, Tenn., first and second cockerel, first and second pullet.

BLACK LANGSHANS.

J. P. Gillman, Bell Buckle, Tenn., first cock, first, third and fifth hen, first and second cockerel, third pullet; Mrs. William Marshall, Nashville, Tenn., second cock, second and fourth hen, third cockerel, first, second and fifth pullet; Miss Ora Waters, Lebanon, Tenn., first pen, third cock, fourth and fifth cockerel, fourth pullet.

WHITE WYANDOTTES.

Mrs. O. A. Hammers, Bakers, Tenn., fourth hen; Mrs. L. A. Ligon, Carthage, Tenn., fourth cock, fifth cockerel, fourth and fifth pen; L. Ferguson, New Middleton, Tenn., second cock, fourth cockerel, third and fourth pullet, third pen; Owen Farms, Vineyard Haven, Mass., first and third cock, first, second, third and fifth hen, first, second and third cockerel, first, second and fifth pullet, first and second pens.

S. C. BROWN LEGHORNS.

L. P. Matthews, Thorntown, Ind., first, second and third cock, second hen, first, second and third cockerel, first and second pullet; J. C. Walker, Hartsville, Tenn., fifth cockerel, first pullet, third hen; C. S. Smiley, Ridge Top, Tenn., fifth cockerel; L. B. Shumate, Antioch, Tenn., fourth cockerel, fifth hen; Dr. H. T. Boyd, Sweetwater, Tenn., fourth cockerel, first hen, fifth pullet, first pen; H. C. Earl, Antioch, Tenn., fourth hen, second pen.

S. C. BUFF LEGHORNS.

D. W. Dickerson, Gallatin, Tenn., fifth cockerel, fifth hen; W. W. Owens, Nashville, Tenn., first cock, second cockerel, second and third hen, fifth pen; S. Hoyal Johnson, Brush Creek, Tenn., second cock, fourth hen, first and third cockerel, first, second and fourth pullet; C. S. Smiley, Ridge Top, Tenn., third cock, first hen; J. A. Koellem, Nashville, Tenn., first cockerel, third pullet.

BARRED PLYMOUTH ROCKS.

Nannie Whitfield, Clarksville, Tenn., first pen, Fairview Poultry Yards, Cookeville, Tenn., second cock; A. J. Bartlet, Franklin, Ky., third pen; G. E. Thompson, Elkton, Ky., first, second, third and fourth cockerel, fourth and fifth pullet, second pen; R. R. Campbell, Abingdon, Va., first cock, second hen; Owen Farms, Vineyard Haven, Mass., first and second pullet; Blythe Bros., Frankfort, Ky., third cock, fifth hen, fifth cockerel, third pullet; Ella Davis, Martha, Tenn., fourth cock, first, third and fourth hen; Mrs. George Kerr, Columbia, Tenn., fourth pen.

S. C. RHODE ISLAND REDS.

H. B. Lansden, Manchester, Tenn., third cock, fourth cock, third and fifth hen, fifth pullet, third pen; Burratt Phinizy, Athens, Ga., third and fifth cockerel; Vilus Inevstus, Cleveland Mills, N. C., fourth pen; Owen Farms,

Vineyard Haven, Mass., first cock, first and fourth hen, second cockerel, fourth pullet, fifth pen; E. F. Anderson, Clinton, Miss., third hen; R. E. Ware, Shelby, N. C., second cockerel; Frank Langford, Nashville, Tenn., second and fifth cock, second hen, first and fourth cockerel, first and second cockerel, first hen and second pullet, first pen.

S. C. RHODE ISLAND WHITES.

C. M. Vertrees, Cecilian, Ky., first hen, first cockerel, first pullet, first cock.

LIGHT BRAHMAS.

Fairview Poultry Yards, Cookeville, Tenn., first cock, first hen; J. C. Walker, Hartsville, Tenn., second cock, second and third hen, first pen.

SILVER WYANDOTTES.

W. B. Harding, Murfresboro, Tenn., first and second cock, first, second, third, fourth and fifth hen, first, second, third, fourth and fifth pullet, first, second, third, fourth and fifth cockerel, first, second and third pen.

ROSE COMB WHITE MINORCAS.

A. J. Bartlet, Franklin, Ky., first cock, second pen; Rankin Eastin, Madisonville, Ky., first, second, third and fourth cockerel, second pen; Martin Poultry Farm, Nashville, first hen.

COLUMBIAN WYANDOTTES.

Owen Farm, Vineyard Haven, Mass., first cockerel, first and third pullet.

PARTRIDGE WYANDOTTES.

H. M. Ross, Tullahoma, Tenn., first and second cock, first cockerel, second and third pullet, first and third hen; C. V. Gwin, Hartsville, Tenn., second and fourth cockerel, first and fifth pullet, second hen, first pen.

BUFF PLYMOUTH ROCKS.

Needuseb Farms, Sharonville, O., first, second and third cock, first, second, third, fourth and fifth hen, first and second pullet, first hen.

PARTRIDGE COCHINS.

Minton & Newsom, Nashville, first cock, first cockerel, first pullet, first pen.

LAKENVELDERS.

Hubert E. McGlothlin, Portland, Tenn., first pen, second pen.

BLUE ANDALUSIANS.

Martin Poultry Farms, Nashville, first and second cock, first and second hen, first cockerel, first and second pullet, first and second pen.

DIAMOND JUBILEE ORPINGTONS.

Mrs. L. L. Upson, Athens, Ga., first pen.

BUFF WYANDOTTES.

Besuden Bros., Cincinnati, first, second, third, fourth and fifth cock, first, second, third, fourth and fifth cockerel, first, second, third, fourth and fifth hen, first, second, third, fourth and fifth pullet, first, second and third pen.

PIT GAMES.

C. M. White, Nashville, first cock, second hen, third hen; Hugh Donald, Auburn, Tenn., second and third cock, first and fourth pen.

TOULOUSE GEESE.

J. M. Gresham, Smyrna, Tenn., first cock, first hen, second cockerel, second pullet; W. B. Harding, Murfreesboro, second cock, third cock, second, third and fourth hen, first cockerel, first pullet, second pullet.

GUINEAS.

W. B. Harding, Murfreesboro, first, second and third cock, first, second, third and fourth hen.

MAMMOTH BRONZE TURKEYS.

W. J. Gresham, Murfreesboro, third cock, third hen; J. Kelly Lawrence, Shelbyville, Ky., first and second cock, first and third hen, first and second cockerel, first and second pullet; W. B. Harding, Murfreesboro, fourth and fifth cock, third pullet, fourth and fifth hen.

NARRAGANSETT TURKEYS.

S. S. Rhea, Fisherville, Ky., first, second and third cock, first, second and third hen, first cockerel, first pullet.

COLORLED ROWEN DUCKS.

Mrs. F. P. King, Winchester, Tenn., first cock, first hen.

PEKIN DUCKS.

W. H. and C. K. Robertson, Auburn, Tenn., second cock, fourth hen, second cockerel, fourth cockerel, second and fourth pullet; Clara M. Baker, Antioch, Tenn., fourth cock, second and third hen, third pullet, third cockerel, first pen; Besuden Bros., Cincinnati, first cock, first hen, first cockerel, first pullet.

BLACK TURKEYS.

McGlothlin Poultry Farm, Portland, Tenn., first cock, first hen; W. B. Harding, Murfreesboro, second cock, third cock, second, third and fourth hen, second and third cockerel, second and third pullet.

BOURBON RED TURKEYS.

W. H. McGlothlin, Portland, Tenn., first cock, first hen, first and second cockerel, first and second pullet; W. B. Harding, Murfreesboro, second cock, second and third hen, third and fourth pullet, third and fourth cockerel.

ANCONAS.

Copperas Falls Farm, Tullahoma, first pen; Dismukes & Arrington, Castalian Springs, Tenn., first hen, third and fourth pen.

BUFF ORPINGTON DUCKS.

Copperas Falls Farm, Tullahoma, first cock, first hen, first cockerel, first pullet, first pen.

EMDEN GEESE.

Mrs. H. G. Hill, Nashville, second cock, third cock, second hen; W. H. and C. K. Robinson, Auburn, Tenn., first cock, first hen.

CHINESE GEESE, WHITE.

W. H. and C. K. Robinson, Auburn, Tenn., first cock, first hen, first cockerel, first pullet.

INDIAN RUNNER DUCKS, FAWN AND WHITE.

Thomas J. Roberts, third pullet; J. R. Bass, Nashville, first cock, first and second hen; Mrs. J. F. Carroll, Hohenwald, Tenn., second cock, second cockerel, second pullet; Clyde Carpenter, Decherd, Tenn., first cockerel, first pullet; Gordon Martin, Nashville, third pen; Clara M. Baker, Antioch, Tenn., second pen; Besuden Bros., Cincinnati, first pen.

WHITE COCHINS.

Edward C. Mason, Nashville, second cock, second cockerel, first, second, third and fourth pullet; Minton & Newsom, Nashville, first cock, first and second hen, first and third cockerel, first pen; B. C. Mayo, Nashville, third, fourth and fifth hen.

WHITE INDIAN RUNNER DUCKS.

W. J. Root, Ensley, Ala., second and fourth cock, third hen; H. B. Lansden, Manchester, Tenn., fifth cock; Copperas Falls Farm, Tullahoma, second and third cockerel, third and fourth pullet; C. C. Shelley, Decherd, Tenn., fourth and fifth cockerel, first pullet; Mrs. C. M. Vertrees, Cecilian, Ky., first cockerel; Hermitage Farm, Hendersonville, Tenn., first and third cock, first hen, fourth and fifth hen, second hen, second pullet, first, second, third, fourth and fifth pen; Mrs. R. O. Tucker, Nashville, fifth pullet.

PENCILED INDIAN RUNNER DUCKS.

D. W. Dickerson, Gallatin, first pen; E. B. Duke, Hartsville, Tenn., first pullet.

AGRICULTURAL AWARDS.

Following awards were made in the agricultural exhibits:

TOBACCO.

County Exhibits—C. E. Frey, Montgomery County, first.

BURLEY TOBACCO.

Red Leaf—G. N. Helman, first; R. H. Helman, second; C. E. Frey, third.

Bright Leaf Burley—N. D. Tipton, first; R. H. Helman, second; J. W. Holman, third.

Cigarette Wrappers—J. W. Dalton, first; F. F. Perkins, second; R. H. Holman, third.

Bright Trash—J. N. Holman, first; R. H. Holman, second; C. E. Frey, third.

Plug or Black Wrapper—C. E. Frey, first; R. H. Holman, second; J. N. Holman, third.

Austrian Wrapper—C. E. Frey, first; R. H. Holman, second; J. M. Holman, third.

Swiss Cigar Wrapper—C. E. Frey, first; J. N. Holman, second; R. H. Holman, third.

German Cigar Wrapper—C. E. Frey, first; J. N. Holman, second; R. H. Holman, third.

Long or African Leaf—C. E. Frey, first; T. D. Richmond, second; R. H. Holman, third.

French Leaf—R. H. Holman, first; J. N. Holman, second; C. E. Frey, third.

Italian Leaf—C. E. Frey, first; R. H. Holman, second; J. N. Holman, third.

German Spinning Leaf—C. E. Frey, first; J. N. Holman, second; R. H. Holman, third.

Snuff Leaf—C. E. Frey, first; G. L. Morris, second; R. H. Holman, third.

Stemming Leaf—C. E. Frey, first; J. H. Holman second; R. H. Holman, third.

POTATOES.

County Exhibits—P. W. Walker, Shelby County, first; C. S. Lorrey, Franklin County, second; Miss Lea Reeves, Davidson County, third.

Home Garden—Miss L. Reeves, first; Mrs. J. M. Looney, second.

IRISH POTATOES.

Red Triumph—J. F. Looney, first; P. W. Walker, second.

White Triumph—Miss Lea Reeves, first; P. W. Walker, second.

Quick Lunch—Miss Lea Reeves, first.

Early Ohio—Miss Lea Reeves, first; C. S. Looney, second.

Early Rose—Miss Lea Reeves, first; T. W. Walker, second.

Irish Cobbler—Will Thorne, first; J. L. Looney, second.

Boree—C. S. Looney, first; Miss Lea Reeves, second.

Crown Jewel—Will Thorne, first; Miss Lea Reeves, second.

Rural New Yorker—P. M. Walker, first; Miss Lea Reeves, second.

Hebron—P. W. Walker, first; Miss Lea Reeves, second.

Peerless—C. S. Looney, first; P. W. Walker, second.

New Queen—Miss Lea Reeves, first; P. W. Walker, second.

Green Mountain—Miss Lea Reeves, first; P. W. Walker, second.

Burbank—H. K. Morgan, first; C. S. Looney, second.

Carmen I—P. W. Walker, first; Miss Lea Reeves, second.

Carmen III—P. W. Walker, first; C. S. Looney, second.

White Star—Miss Lea Reeves, first; P. W. Walker, second.

White Elephant—Miss Lea Reeves, first; W. I. Gresham, second.

Any Other Variety—Miss Lea Reeves, first; J. T. Whitworth, second.

SWEET POTATOES.

Southern Queens—Miss Lea Reeves, first; P. W. Walker, second.

Strausburg—A. T. Jackson, first; P. W. Walker, second.

Yellow Yams—P. W. Walker, first; C. S. Walker, second.

Red Yams—C. S. Walker, first; Miss Lea Reeves, second.

Yellow Nonsemond—P. W. Walker, first; C. S. Walker, second.

Any Other Variety—G. M. Rizer, first; Miss Lea Reeves, second.

CORN.

Ten Ears, Boys' Corn Club of Middle Tennessee—First, John Rizer.

Ten Ears, Boys' Corn Club of East Tennessee—First, Roy McMahon.

County Exhibits—First, Henry K. Morgan, Bedford County; second, Geo. Eleazer, Dickson County; third, C. S. Looney, Franklin County.

County Exhibit, Boys' Corn Club—First, K. L. Nichols, Jr., Trousdale County; second, Estill Jones, Franklin County.

Huffman Type—First, Tom Martin; second, Henry Morgan; third, Miss Lea Reeves.

Boone or Johnson County Type—First, J. N. Holman; second, Gil T. Buford; third, C. E. Frey.

Tennessee Red Cob—First, A. W. Tyson; second, Walter Jones; third, S. T. Mitchener.

Tennessee White Cob—First, Miss Nancy Lea Scott; second, J. W. Scott; third, R. H. Holman.

Leaning Type—First, J. W. Dickerson; second, Walter Jones; third, S. T. Mitchener.

Improved Watson Type—First, Roy Park; second, C. E. Frey; third, W. R. Park.

Hickory Cane—First, Henry K. Morgan; second, J. H. C. Leigh; third, W. C. Leigh.

Yellow Dent—First, J. W. Dickerson; second, J. W. Tyson; third, Henry K. Morgan.

Iowa Silver Mine—First, R. E. Hopkins; second, W. I. Gresham; third, Wesley Reeves.

Albemarle Prolific—First, Lester Morgan; second, Chas. Bowine, Jr.; third, H. K. Morgan.

Red or Strawberry—First, Roy Park; second, R. E. Hopkins; third, T. F. Perkins.

Not Listed Alone—First, Miss Nancy Lee Scott; second, A. M. Dement; third, J. W. Scott.

White Corn—First, Bernard L. Huffman; second, Roy Park; third, John B. Rizer; fourth, Guy Chumm.

Other Than White Corn—First, J. M. Rankin; second, Ray Ward; third, Roy Park; fourth, Frank Perkins.

Best Individual Exhibit, Sweepstake—First, Miss Nancy Lee Scott.

HAY.

Baled Hay—First, I. W. Gresham; second, J. O. Baber; third, T. W. Walker.

WHEAT.

Fulcaster Wheat—First, G. K. Walker; second, P. W. Walker; third, C. S. Walker.

Poole Wheat—First, C. S. Walker; second, George Eleazer; third, T. C. Looney.

Everett's Wheat—First, George Eleazer.

Fultz Wheat—First, G. K. Walker; second, C. S. Walker; third, P. W. Walker.

Fulzo-Mediterranean Wheat—First, C. S. Walker; second, R. K. Walker; third, P. W. Walker.

Unlisted Wheat—First, P. W. Walker; second, Henry K. Walker; third, C. S. Looney.

OATS.

Gray Turf Oats—First, G. K. Walker; second, P. W. Walker; third, C. S. Walker.

Unnamed Winter Oats—First, T. B. Richman; second, T. B. Richman; third, G. K. Walker.

Burt Oats—First, W. P. Gresham; second, T. B. Richman; third, Walter Blackman.

Kherson Oats—First, G. K. Walker.

Red Rust-proof Oats—First, C. S. Walker; second, G. K. Walker; third, P. W. Walker.

Unlisted Oats—First, Henry K. Morgan; second, P. W. Walker; third, J. M. Gresham.

BARLEY.

Unicorn—First, C. S. Looney; second, T. B. Richman.

Tennessee—First, P. W. Walker; second, Walter Blackman; third, J. W. Dickinson.

Beardless—First, G. K. Walker; second, C. S. Walker; third, P. W. Walker.

Unnamed Varieties—First, C. S. Walker; second, G. K. Walker; third, P. W. Walker.

Winter Rye—First, Walter Blackman; second, W. I. Gresham; third, C. S. Walker.

Rough Rice—First, P. W. Walker.

Sorghum—First, P. W. Walker.

Millet—First, P. W. Walker.

PEANUTS.

Spanish—Second, George Eleazer; third, J. M. Gresham.

Virginia—Third, George Eleazer.

Red—Second, George Eleazer; third, J. F. Looney.

PEAS AND BEANS.

Whippoorwill—First, Baley Gresham; second, Henry K. Morgan; third, C. S. Looney.

Black—First, P. W. Walker.

Any Variety—First, J. S. Looney; second, C. S. Looney.

Yellow Soy Beans—First, Walter Blackman.

COTTON.

Trice—First, P. W. Walker.

Russell—First, C. S. Walker.

King—First, C. S. Walker; third, J. M. Gresham.

Unnamed Long Staple Cotton—First, C. S. Walker; second, G. K. Walker; third, W. L. Gresham.

HOG MEAT AND LARD.

Country Cured Ham—First, R. F. Long; second, Jim Ferrell; third, Mrs. J. D. Taylor.

Country Cured Bacon—First, John Trout; second, Clover Bottom Farm; third, Mrs. F. O. Allen.

Home-made Lard—First, Clover Bottom Farm; second, Miss Lea Reeves; third, C. S. Looney.

Grain and Forage Crops—First, C. S. Looney; second, P. W. Walker; third, George Eleazer.

MISCELLANEOUS VEGETABLES.

- Red Onions—First, Will Thoni; second, Mrs. F. O. Allen.
White Onions—First, Miss Lea Reeves; second, John B. Rotier.
Yellow Onions—First, H. K. Morgan; second, Mrs. F. O. Allen.
Three Heads of Cabbage—First, Will Thoni; second, Miss Ida Smith.
Largest and Best Sugar Pumpkin—First, C. S. Walker; second, P. W. Walker.
Largest Pumpkin—First, Clover Bottom Farm; second, Wesley Reeves.
Hubbard Squash—First, R. W. Walker.
White Squash—First, Will Thoni.
Summer Crook-Neck Squash—First, Geo. Eleazer; second, Miss Lea Reeves.
Morrow Squash—First, P. W. Walker.
Turban Squash—First, P. W. Walker.
Red Table Beets—First, Will Thoni; second, Miss Ida Smith.
Purple-Top Turnips—Will Thoni.
Parsnips—First, Will Thoni; second, Henry K. Morgan.
Carrots—First, George R. Rotier; second, Miss Ida Smith.
Salsify Roots—First, Will Thoni; second, Arnold Zopfi.
Cucumbers for Slicing—First, Will Thoni; second, A. W. Zopfi.
Sweet Corn—First, Clover Bottom Farm; second, Arnold Zopfi.
Celery—First, Arnold Zopfi; second, John P. Rotier.
Rhubarb—First, N. R. Wills.
Leek—First, Miss Ida Smith; second, Will Thoni.
Parsley—First, Will Thoni; second, Arnold Zopfi.
Lettuce—First, Will Thoni; second, John P. Rotier.
Egg Plant—First, Will Thoni; second, Ed Thoni.
Green Pod Snap Beans—First, Miss Ida Smith; second, Will Thoni.
Dwarf Lima Beans, in Pod—First, John P. Rotier.
Pole Lima Beans, in Pod—First, G. F. Looney.
Pole Beans—First, Miss Lea Reeves; second, Jack Reeves.
White Beans—First, C. S. Walker; second, C. S. Looney.
Lady Peas—First, P. W. Walker.
Black-Eyed Peas—Second, P. W. Walker.
Okra—First, Miss Ida Smith; second, Will Thoni.
Small Pepper—First, Miss Ida Smith; second, John P. Rotier.
Large Pod Pepper—First, Will Thoni; second, John P. Rotier.
Yellow Tomatoes—First, Miss Lula Elason.
Purple Tomatoes—First, Arnold Zopfi.
Red Tomatoes—First, Will Thoni; second, Geo. W. Martin.
Cherry Tomatoes—First, G. M. Gresham; second, Miss Ida Smith.
Pear Tomatoes—First, Miss Ida Smith; second, Mrs. Lula Elason.
Cantaloupes—First, Will Thoni; second, Miss Lea Reeves.
Largest and Best Watermelon—First, J. W. Hurt; second, Clover Bottom Farm.
Three Watermelons. Different Varieties—First, John Hurt; second, Clover Bottom. Farm.

FRUIT AWARDS.

PEACHES.

Health Cling—Second, F. L. Leigh.
 Freestone Seedling—First, J. C. Murphy.
 Clingstone Seedling—First, A. J. Byrn; second, W. H. Rochell.

PEARS.

Bartlett—First, Dr. W. H. Tanksley.
 Duchess—First, J. K. Nicholson; second, George W. Martin.
 Garber—First, J. H. Blackburn; second, A. J. Byrn.
 Keifer—First, J. C. Murphy; second, George Eleazer.
 Leconte—First, J. C. Murphy; second, J. J. Reasor.
 Seckel—First, George W. Martin.
 Other Varieties—First, J. C. Murphy (Flemish Beauties).

GRAPES.

Catawba—First, John Mir; second, C. S. Looney.
 Concord—First, Wilburn Lowell; second, C. S. Looney.
 Goethe—First, John Mir.
 Lutie—First, John Mir; second, J. F. Looney.
 Niagara—First, C. S. Looney; second, Wm. Lowell.
 Norton's Virginia—First, John Mir.

PLUMS AND QUINCES.

Purple Plums—First, J. C. Murphy.
 Dawson Plums—First, J. F. Murphy; second, J. F. Looney.
 Quinces—First, J. C. Murphy.

COLLECTIVE EXHIBIT.

Best County Collection of Fruits—First, J. C. Murphy; second, A. J. Byrn; third, T. D. W. McMahon.

Collection of Seedling Apples—First, J. C. Murphy; second, W. R. Wills; third, T. A. McKee.

Peaches—First, J. C. Murphy.

Pears—First, J. C. Murphy; second, J. L. Reasor.

Grapes—First, C. L. Looney; second, Wilburn Lowell; third, John Mir.

Plums—First, J. C. Murphy.

APPLES.

Apples—First, J. C. Murphy; second, H. C. Scruggs; third, J. H. Blackburn.

Apples From Single County in Bushel Boxes—First, J. C. Murphy; second; H. C. Scruggs.

Bushel of Apples Exhibited by Grower—First, H. C. Scruggs; second, J. C. Murphy.

Early Harvest—First, J. C. Murphy; second, Percy Brown.

Duchess—First, J. C. Murphy; second, H. C. Scruggs.

Arkansas Blacks—First, J. C. Murphy.

Fanny—First, J. C. Murphy.

Horse—First, J. C. Murphy.

Ingram—First, J. H. Blackburn.

Maiden's Blush—First, J. C. Murphy; second, D. W. McMahon.

Rambo—First, D. W. McMahon.

- Black Ben Davis—First, J. A. Griffin; second, J. C. Murphy.
 Ben Davis—First, J. C. Murphy; second, J. H. Rochell.
 Champions—First, J. A. Gaffin; second, J. H. Blackburn.
 Commerce—First, J. A. Gaffin; second, J. H. Blackburn.
 Delicious—First, Marvin Fly; second, L. A. Gaffin.
 Gano—Second, Dr. W. H. Tanksley.
 Golden Russet—First, Henry Snowden; second, A. J. Byrn.
 Grimes' Golden—First, Henry Snowden; second, W. G. Wilkinson.
 Jonathan—First, F. H. McClung; second, J. C. Murphy.
 King David—First, Roy Holman; second, C. E. Frey.
 Kinnard's Choice—First, P. C. Murphy; second, W. G. Wilkinson.
 Stayman's Winesap—First, J. C. Murphy; second, W. H. Rochell.
 Pearman—First, W. G. Wilkinson; second, J. C. Murphy.
 Rall's Gennette—First, A. J. Byrn.
 Royal Limbertwig—First, T. D. McMahon; second, H. C. Scruggs.
 Rome Beauty—First, Harry Snowden; second, A. J. Byrn.
 Roxbury Russet—First, N. R. Wills.
 Shockley—First, W. H. Rochell.
 Twenty Quince—First, H. C. and C. K. Robinson.
 Virginia Beauty—First, D. W. McMahon; second, N. R. Wills.
 Winesap—First, J. C. Murphy; second, D. W. McMahon.
 Yates—First, J. C. Murphy; second, W. G. Wilkinson.
 Yellow Bellflower—First, T. D. W. McMahon.
 York Imperial—First, J. C. Murphy; second, H. C. Scruggs.
 Seedlings—First, P. C. Murphy; second, J. C. Murphy.
 Any Variety—Second, Percy Brown; second, George W. Martin; second, J. H. Green; first, W. G. Wilkinson; first, N. R. Wills; first, H. C. Scruggs; four first and one second, T. D. W. McMahon.

APIARY.

- Best Ten Pounds Extracted Honey—First, Buchanan Bros.; second, J. E. and Frank Ring.
 Fifty Pounds Extracted Honey—First, Buchanan Bros.; second, J. E. and Frank Ring
 Twelve Pounds Comb Honey—First, J. S. McKay; second, Buchanan Bros.; third, J. E. and Frank Ring.
 Fifty Pounds Granulated Honey—First, Buchanan Bros.
 Five Pounds Granulated Honey—First, Buchanan Bros.; second, J. S. McKay.
 Labeled Honey—First, Buchanan Bros.; second, J. E. and Frank Ring.
 Beeswax—First, Buchanan Bros.; second, J. E. and Frank Ring.
 Nucleus of Dark Italian Bees—First, J. E. and Frank Ring; second, Buchanan Bros.
 Nucleus of Any Other Race of Bees—First, J. E. and Frank Ring.
 Best and Largest Display of Bees—First, J. E. and Frank Ring; second, Buchanan Bros.

FARM BOYS' ENCAMPMENT.

One of the features of the Fair which attracted much attention, and is destined to become more popular each year, was the Farm Boys' Encampment. The State Fair offered to bring to Nashville, paying all expenses, one boy from each of the ninety-six counties of the State, giving these boys a chance to see the Fair and to learn much of value to the farm boys of the State.

Seventy of the counties of the State took advantage of this liberal offer and were represented by the finest lot of farm boys ever assembled together in Nashville.

They were in camp in the field, in charge of Capt. C. W. Smith, of the Adjutant-General's office, and Mr. J. N. Meroney, of Maury County. Their behavior in camp was splendid and they did the work assigned them cheerfully and were much interested in the lectures delivered by Prof. H. A. Morgan, Prof. C. A. Keffer, Prof. Wilson, in the live stock pavilion; A. L. Garrison, of the Department of Agriculture; Capt. T. F. Peck, Dr. George R. White and others. They were also addressed by Governor B. W. Hooper.

Wednesday a special car was placed at the disposal of the gentlemen in charge of the boys' encampment by the Nashville Railway & Light Company, and they were taken to the plant of the Tennessee Packing & Provision Company, the Naive-Spillers poultry establishment, the Union Stockyards, the Marathon Automobile Company's plant, the city light plant, the city fire department, the State Capitol and the State Prison. This sight-seeing tour was much enjoyed as well as very instructive.

The following boys were in the camp:

Anderson—Wm. H. Dail, Leinarts, Tenn.
Benton—Wilson Arnold, Camden, Tenn.
Bledsoe—Alton C. Greer, Pikeville, Tenn.
Blount—Knox Ellis, Maryville, Tenn.
Bradley—Enoch Atchley, McDonald, Tenn.
Campbell—Mack M. Sharp, Jacksboro, Tenn.
Cannon—Wm. G. Mears, Bradyville, Tenn.
Carroll—Glenmore Hawkins, Huntingdon, Tenn.
Carter—Nat Nave, Elizabethton, Tenn.
Chester—John Reid, Henderson, Tenn.
Cocke—Paul McNabb, Newport, Tenn.
Coffee—Dawson Kay, Manchester, Tenn.
Crockett—Paul Avery, Alamo, Tenn.
Cumberland—G. F. Brookhart, Peavine, Tenn.
Decatur—C. L. Dennison, Decaturville, Tenn.
DeKalb—Bratton Evans, Liberty, Tenn.
Dickson—Oscar Choate, Sylvia, Tenn.



FARM BOYS AT THE STATE FAIR.

- Dyer—A. G. Harris, Jr., Newbern, Tenn.
Fayette—Claude Douglass, Mason, Tenn.
Franklin—Henry Looney, Winchester, Tenn.
Gibson—Maurice E. Barker, Humboldt, Tenn.
Giles—James Brown, Linnville, Tenn.
Greene—Robert R. Wisecarver, Mosheim, Tenn.
Hamilton—Joe Goodson, Hixon, Tenn.
Hardeman—Hugh Milstead, Bolivar, Tenn.
Hardin—John Cantrell, Pittsburg Landing, Tenn.
Hawkins—Maxwell Hamilton, Baileyton, Tenn.
Haywood—J. Murray Davis, Brownsville, Tenn.
Henry—Albert Green Giles, Paris, Tenn.
Hickman—Jack Harvill, Totty's, Tenn.
Houston—Turney McAskill, Stewart, Tenn.
Humphreys—Dail Carter, McEwen, Tenn.
Jackson—Bruce Settle, Gainesboro, Tenn.
James—Harry Fisher, Apison, Tenn.
Johnson—Bruce Wills, Mountain City, Tenn.
Knox—Robert Toole, Concord, Tenn.
Lauderdale—Geo. Wadsworth, Ripley, Tenn.
Lawrence—H. L. Williams, Appleton, Tenn.
Lewis—Fred Lomax, Hohenwald, Tenn.
Lincoln—Walter Lee Gray, Fayetteville, Tenn.
Loudon—Ben M. Roberson, Loudon, Tenn.
McMinn—Mack Ferguson, Englewood, Tenn.
McNairy—Cecil Suggs, Chewalla, Tenn.
Macon—Haskil Ferguson, Red Boiling Springs, Tenn.
Maury—Angie B. Sewell, Carter's Creek, Tenn.
Monroe—Ben Sands, Sweetwater, Tenn.
Montgomery—Robt. Lauren Edmondson, Clarksville, Tenn.
Moore—Will Stone, Flat Creek, Tenn.
Morgan—Noah D. Byrd, Warthburg, Tenn.
Obion—W. O. Chamberlain, Rives, Tenn.
Overton—Berlie Winton, Monroe, Tenn.
Perry—Prim Bangus, Lobelville, Tenn.
Polk—John C. Prince, Benton, Tenn.
Putnam—L. D. Bryant, Baxter, Tenn.
Roane—Chas. Tramwell, Rockwood, Tenn.
Robertson—Jno. D. Kelly, Orlinda, Tenn.
Rutherford—Tillman Haynes, Murfreesboro, Tenn.
Scott—Arthur J. Walker, Robbins, Tenn.
Sequatchie—Leslie Freiley, Dunlap, Tenn.
Sevier—Grady Fox, Sevierville, Tenn.
Shelby—George McClure, Whitehaven, Tenn.
Smith—Charlie Moss, Riddleton, Tenn.
Stewart—Gray Acree, Model, Tenn.
Sumner—John M. Woodson, Bethpage, Tenn.
Tipton—Guilford Laytor, Mason, Tenn.
Trousdale—Wm. D. Lauderdale, Hartsville, Tenn.

Van Buren—Ray Ward, Sparkman, Tenn.

Washington—Arthur DePew, Jonesboro, Tenn.

Weakley—Ed Hunt, Sharon, Tenn.

Wilson—Chas. Price, Lebanon, Tenn.

The following action was taken by the boys before breaking camp:

We, as the committee representing the members of the farm boys' encampment, wish to thank the State Fair Association and the officers in charge of camp for their kindness and courtesy toward us during our stay on the Fair grounds. We must say that the interest shown in us could have been no greater.

GRADY B. FOX.

ENOCH ATCHLEY.

CLAUDE DOUGLASS.

GEORGE MCCLURE.

GEO. F. BROOKHART.

IMPROVE YOUR SEED CORN.

By A. L. Garrison, Chief Feed and Seed Inspector.

During the tour of the agricultural special train over the State I made the statement to thousands of farmers that there was no time devoted to the crop that paid better than seed selection, and that there is just as much development in field seed as there is in live stock. I am well aware of the fact that a great many did not credit this statement with its true significance, so I am going to follow up my line of argument with corroborative evidence. I will first most respectfully call your attention to Bulletin No. 57 of the Virginia Department of Agriculture, which has an article, "Improve Your Seed Corn."

The farmer should give as much care and attention to the improvement of his seed corn as he does to the improvement of his live stock. It will pay him just as much. No farmer wants to breed from live stock that has a large mixture of scrub blood. Neither should he plant seed corn that has a large mixture of pollen from nubbins and barren stalks, for this kind of corn will produce nubbins and barren stalks just as certainly as scrub blood will show from breeding stock with scrub blood in them.

Then why not plant a seed corn plot off to itself and breed up your seed corn year after year? In a few years you will increase the yield of your corn crop ten bushels or more per acre without any extra cost.

The simplest kind of a seed corn plot is one handled in the following manner: In the first place, select the best ears that you can find with which to plant it; select ears of the type that will yield the most in the average season; ears of medium length with a deep kernel, with



MONTGOMERY COUNTY BOYS' CORN CLUB.

straight even rows, and which are well filled at butt and tip. Then test these ears to see if they will germinate well. Then plant a plot from these ears just as though you were planting an ordinary field, and throughout the year give it good, ordinary cultivation. If there is possibility that you may not give a plot like this good care, it had better be located on one side of the big field than by itself. The time to give especial attention to this sort of a plot is in the fall, at seed corn picking time. By all means this crop must be harvested and the corn dried and stored in the best manner possible.

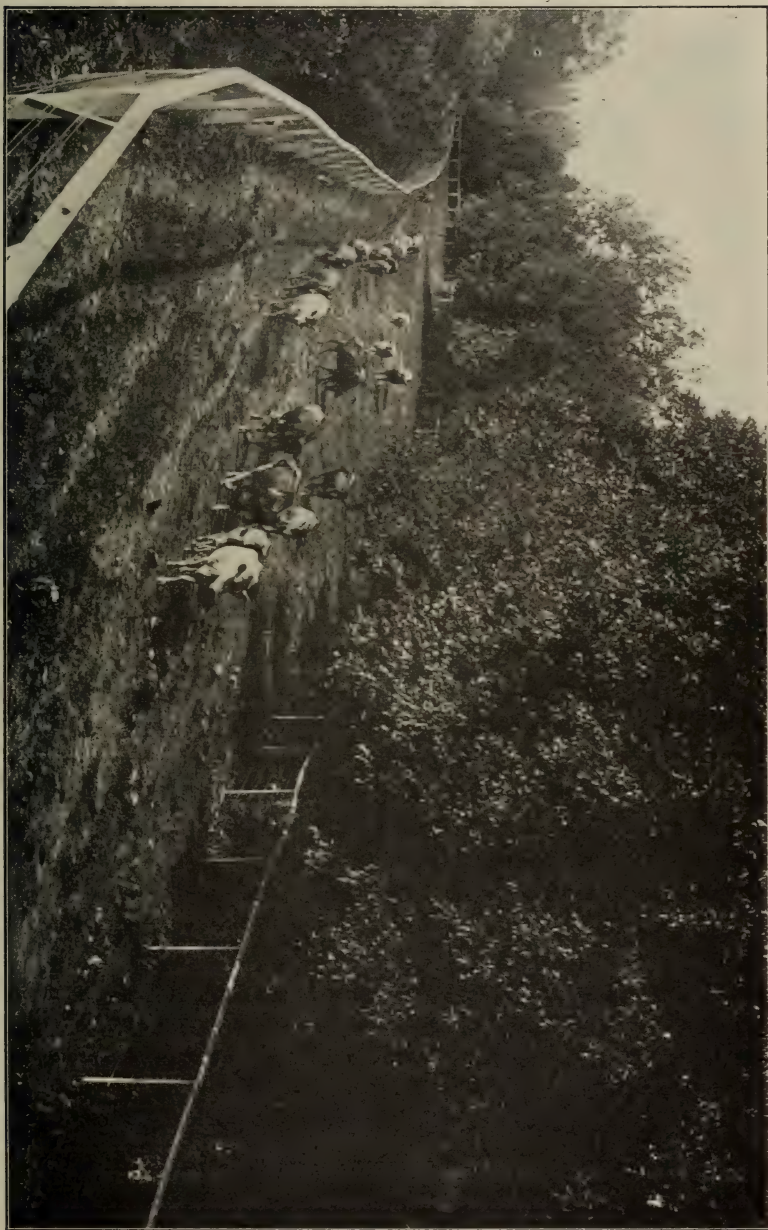
This sort of a seed corn plot is not truly a breeding plot. It is just simply a plot of ground planted from the best ears, given good cultivation and to which special attention is given at harvest time. The advantage of this sort of seed plot to most farmers simply is that when they have a particular plot that they call their seed corn plot, they are more likely to give special attention at harvest time to picking their seed at the right time and properly caring for it than when all the corn is in



A FINE EAR OF CORN.

a big field together. The benefit is more from proper harvesting than from any true breeding. In this sort of a plot the character of the stalks may also be taken into consideration in picking seed.

A breeding plot takes but little more time and trouble than the ordinary plot, and in a few years produces much better results. In its simplicity it is as follows: A number of the best ears are collected as above. The ears are numbered and each ear is planted in a row to itself. This, of course, takes extra time and trouble at planting time but is time for which in the end good pay is sure to be received. Men who try this ear-to-a-row planting for the first time are always astonished. One row, for instance, that was planted from what appeared to be the best ear, may not do at all well. The plants may be noticeably shorter than those of the surrounding rows, and yield less at harvest time. Another row may tassel out three or four days before any of the other rows and produce an earlier maturing crop. A man who will observe this ear-to-row corn breeding plot will learn much and receive good pay for time so spent. Ordinary care is given until tasseling time;



A DAIRY SCENE.

then just as the tassels are coming out, go over every other row of the entire plot and pull out all the tassels. It may be necessary to go over the entire plot several times in order to get all the tassels of every other row. In the fall, seed corn will be selected only from the rows which were detasseled. This is important, for it has been proved beyond all doubt that inbred corn, that is, corn whose ears have been pollinated by pollen from the same plant or from brother plants, will not produce nearly as much as cross-bred corn.

When harvest time comes, the product of these detasseled ears is weighed separately, and it is determined which ear yielded best and produced the most sound corn of a good type. Of course, it is from such rows that the seed for future seed corn breeding plots will be selected. The seed corn for planting the entire crop of the next year may be selected from any of the rows in the plot, but preferably, of course, from the high yielding ones. This method means that care must be taken at planting, tasseling and at the harvest time.

Breeding of this sort must be kept up for several years before the results are felt to any great extent in the field; but improvement is bound to come, and may result in the increase in yield of all corn on the farm of as much as ten to fifteen bushels to the acre. Such increases which are due to breeding alone are net profit.

RESULTS OF POTATO SPRAYING EXPERIMENTS.

For ten years the New York Agricultural Experiment Station at Geneva has conducted potato spraying tests on its own grounds at Riverhead, Long Island; for nine years it has received reports from 6 to 15 farmers who have sprayed potatoes and left check rows so that they knew whether spraying increased their yields or not, and also knew how much the spraying cost; and for seven years it received additional reports from 5 to 60 other farmers who sprayed, but not under station supervision. Now, in Bulletin No. 349 the results of the ten years are summarized somewhat as follows: In tests on its own grounds, spraying three times has given an average annual increase of 69 bushels to the acre, and spraying five to seven times a gain of $97\frac{1}{2}$ bushels; spraying by station men at Riverhead, under much less favorable soil and climatic conditions, raised the yields 25 and $45\frac{3}{4}$ bushels, respectively; the farmers' business experiments gave an average increase of 36.1 bushels to the acre and an average net profit of \$14.43 an acre, and 205 volunteer experiments secured an average acre gain of 54.3 bushels.

The station maintains that it pays to spray potatoes regularly. Why not send for the bulletin and weigh the proof?

TENNESSEE BREEDERS.

The Department of Agriculture has compiled the following list of breeders of live stock in Tennessee. The list is, of course, incomplete, and the Department desires any whose names have been omitted in the various counties to notify the Commissioner of Agriculture, that they may be included in the list when published for distribution in pamphlet form:

DAIRY CATTLE.**JERSEY.**

Bedford County.....	L. D. Green, Shelbyville. Robt. Gallagher, Shelbyville.
Benton County.....	E. E. McDaniel, Camden.
Bradley County.....	Mrs. L. A. Bater, Charleston. J. U. Varnell, Cleveland. J. W. McGhee, Cleveland.
Cannon County.....	B. F. Wood, Woodbury.
Cocke County.....	W. J. McSween, Newport.
Coffee County.....	I. N. Pearson, Tullahoma.
Cumberland County....	Milton Foster, Grassy Cove. Jas. Smith, Crossville.
Decatur County.....	Al Johnson, Decaturville.
Fayette County.....	R. L. Day, Somerville. H. C. Moorman, Somerville. H. S. Bevan, Somerville.
Fentress County.....	Very few Jersey cattle. No dairy.
Franklin County.....	Frank E. Pittings, Winchester.
Giles County... ..	F. E. Ranck, Pulaski. H. K. English, Pulaski. R. 2. S. C. Appleby, Pulaski. T. L. Smithson, Pulaski. Will Ewing, Pulaski.
Greene County.....	D. F. Bolton, Limestone. F. P. Robinson, Greeneville.
Hamblen County.....	R. L. Wheeler, Morristown.
Hamilton County.....	L. D. Roberson, East Chattanooga. Dr. T. J. Shepherd, Loveman Bldg., Chattanooga.
Hancock County.....	T. W. Campbell, Sneedville. Warner Harrison, Sneedville.
Hawkins County.....	Frank Duff, Rogersville. Chas. Beal, Rogersville.
Houston County.....	J. C. Hobbs, Erin.
Jackson County.....	A. H. Johnson, Gainesboro.
James County.....	P. M. Cate, Ooltewah. W. C. Shered, Ooltewah.
Lauderdale County....	H. P. Keller, Ripley. S. S. Carson, Ripley.
Lincoln County.....	Hatcher Bros., Fayetteville.
McMinn County.....	W. Gettys, Athens.

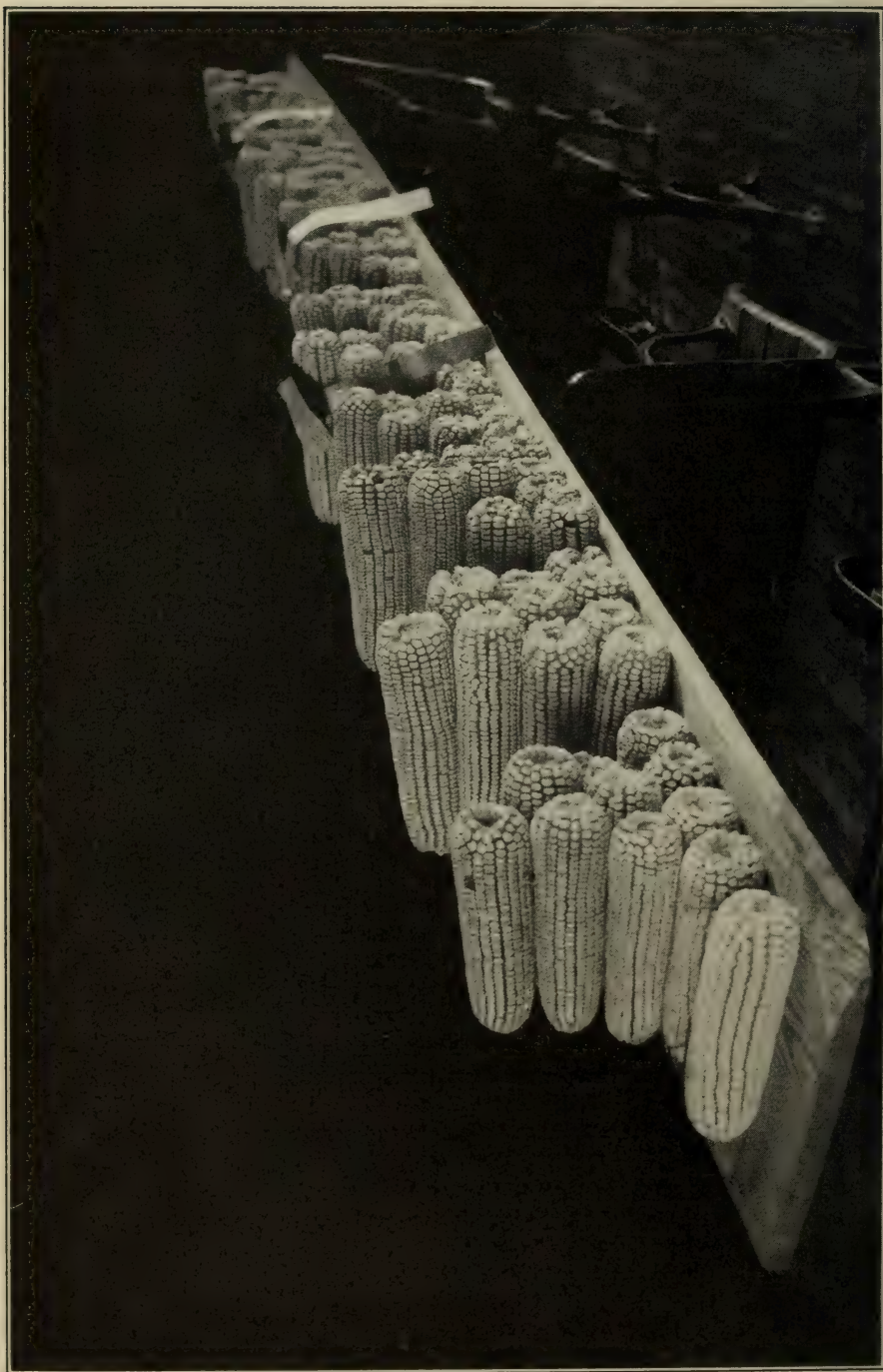


EXHIBIT OF MONTGOMERY COUNTY BOYS' CORN CLUB.

McNairy County.....	Clem Lea, Selmer.
Maury County.....	P. Whitaker & Son, Columbia. A. N. Akin, Columbia. Frierson & Webster, Columbia.
Meigs County.....	E. T. Hunter, Decatur.
Moore County.....	Jas. T. Bickley, Lynchburg.
Morgan County.....	Hans Nelson, Stowers.
Overton County.....	W. A. Officer, Oak Hill.
Putnam County.....	Hughes & Pointer, Cookeville.
Rutherford County.....	T. H. Crichlow, Murfreesboro. G. M. Darrow, Murfreesboro. P. A. Lyon, Murfreesboro. J. Moore King, Murfreesboro. A. R. King, Murfreesboro. Dr. J. J. Rucker, Overall. Royal Jersey Farm, Murfreesboro.
Smith County.....	J. T. Butts, Gordonsville. J. P. Baker, Monoville.
Stewart County.....	W. W. Brandon, Dover. O. T. Reynolds, Dover. L. N. Taylor, Big Rock. J. A. Morgan, Big Rock.
Trousdale County.....	J. H. Rickman, Hartsville.
Unicoi County.....	W. J. Peebles, Unicoi. R. 1.
White County.....	J. W. Ward, Sparta. R. J. Snodgrass, Sparta.
Williamson County.....	J. M. Alexander, Franklin. R. 2.
Wilson County.....	Coe, Jackson & Co., Lebanon.

HOLSTEIN.

Cumberland County.....	James Smith, Crossville.
Franklin County.....	John Basehart, Winchester.
Giles County.....	F. M. Ewing, Pulaski.
Hancock County.....	Norman Harison, Sneedville.
Johnson County.....	Jas. A. Shull, Neva.
Putnam County.....	F. H. White, Cookeville.

BREEDERS OF BEEF CATTLE.

HEREFORD.

Bradley County.....	T. E. Thatch, Cleveland. W. E. Shepherd, Cleveland. C. A. Mill, Cleveland.
Cannon County.....	Jo D. Hawkins, Woodbury. W. C. Houston, Woodbury.
Coffee County.....	F. A. Raht, Tullahoma.
Cumberland County....	I. R. Beeson, Crossville. A. L. Garrison, Crossville.
Fayette County.....	W. S. Piper, Collierville.
Giles County.....	Aleck Reed, Pulaski.
Grainger County.....	Albert Dunn, Leas Springs.

Greene County.....	Jno. B. Brooks, Greeneville. T. D. Leming, Greeneville.
Hancock County.....	John Martin, Sneedville. Paul Purkey, Sneedville.
Hawkins County.....	W. C. Davis, Rogersville.
Houston County.....	A. E. Richardson, Erin. Rodney Blake, Cumberland City.
Jackson County.....	Dr. S. B. Fowler, Gainesboro.
James County.....	A. L. Carter, Georgetown.
Johnson County.....	J. N. Wills, Mountain City.
Lauderdale County.....	J. T. Farguson, Curve. Clyde Johnson, Ripley.
Lincoln County.....	E. C. Ashby, Fayetteville. B. B. Smythe, Petersburg.
Meigs County.....	W. A. Ewing, Tennessee Mills.
Overtown County.....	W. A. Willeford, Algood.
Putnam County.....	Harvey Terry, Sr., Cookeville. L. P. Farley, Cookeville.
Rutherford County.....	W. P. Prater, Rucker. Hiram Couch, Murfreesboro. J. D. Carter, Murfreesboro. Jim Cobb, Manchester. Jno. Brittain, Lavergne.
Sevier County.....	J. B. Brabson, Boyd's Creek.
Stewart County.....	Maj. T. W. Lewis, Cumberland City.
White County.....	R. P. Officer, Sparta. H. Forley, Sparta. Jim Terry, Sparta.
Williamson County.....	Sandy Brown, Franklin.

ANGUS.

Bedford County.....	R. W. Clark, Shelbyville. H. T. Parker, Shelbyville.
Cocke County.....	Huff and Murray, Newport.
Coffee County.....	A. M. Wordon, Tullahoma.
Cumberland County....	James Smith, Crossville.
Fayette County.....	A. H. Harvey, Somerville.
Fentress County.....	V. H. Pile, Pall Mall. Wright Bros., Pall Mall.
Franklin County.....	J. E. Kaserman, Winchester.
Giles County.....	Gil T. May, Pulaski. Boon May, Pulaski.
Greene County.....	D. T. Jones, Warrensburg.
Hamblen County.....	Balwin Haree, Morristown.
Hancock County.....	H. F. Coleman, Sneedville.
Hawkins County.....	Joe Webster, Persia. Lloyd Moore, Church Hill.
Jackson County.....	H. L. Baugh, Granville.
Johnson County.....	B. G. Wills, Mountain City.
Meigs County.....	J. A. Hagler, Euchee.

Moore County.....	F. M. Riddle, Tullahoma.
Putnam County.....	B. P. Pointer, Cookeville. J. B. Dowell, Cookeville.
Trousdale County.....	J. F. Duncan, Hartsville.
Wilson County.....	W. H. Neal, Lebanon. R. I.

SHORTHORN.

Bedford County.....	H. A. Clark, Wartrace. Jno. W. Cunningham, Wartrace. W. W. Hix, Shelbyville.
Benton County.....	G. G. Camp, Camden.
Cannon County.....	W. D. Preston, Woodbury. A. N. Brown, Woodbury.
Cocke County.....	Jno. M. Stokely, Newport.
Coffee County.....	W. B. Walker, Wartrace.
Cumberland County....	V. E. Payne, Crossville. G. M. Martin, Crossville. Jno. Turner, Grassy Cove. J. C. Kemmer, Grassy Cove. T. E. Wilson, Grassy Cove. James Smith, Crossville.
Fayette County.....	A. H. Harvey, Somerville.
Franklin County.....	James Clark, Winchester.
Giles County.....	T. M. Stevenson, Pulaski. C. L. English, Pulaski. Jno. Ballentine, Pulaski. O. H. Tidwell, Pulaski.
Grainger County.....	Joe Brown, Tate Springs.
Greene County.....	J. A. Noel, Greeneville.
Hamblen County.....	Wiley O. Read, Morristown. S. S. Smith & Bro., Whitesburg.
Hancock County.....	J. W. Testerman, Kyles Ford. Henry Parkey, Sneedville.
Hawkins County.....	W. P. Smith, Surgoinville. Dr. J. K. Walters, Rogersville. J. D. Hamilton, Baileyton. Charley Smith, Rogersville.
Houston County.....	J. T. Brigham, Erin.
James County.....	Ed Robinson, Ooltewah. T. S. Buell, Ooltewah.
Johnson County.....	N. R. Wills, Mountain City. Oscar Wills, Mountain City. James Shell, Neva.
Lauderdale County....	Ed Johnson, Ripley.
Lawrence County.....	Peter McArtor, Ethridge.
Lincoln County.....	Geo. Warren, Petersburg.
McMinn County.....	Dr. J. S. Kitterell, Etowah.
Meigs County.....	L. S. Stewart, Decatur.
Moore County.....	Lem Motlow, Lynchburg.

Overton County.....	H. F. Keisling, Monroe.
Putnam County.....	P. Jones, Silverpoint. Jerre Whitson, Cookeville. D. L. Lansden, Cookeville. W. S. Farmer, Cookeville.
Rutherford County.....	R. H. Smith, Murfreesboro.
Sevier County.....	W. R. Catlett, Kodak.
Smith County.....	Jno. B. Wilson, Rome. Charlie Shaver, Grant.
Stewart County.....	Lee Taylor, Big Rock. N. Duncan, Big Rock. J. H. Clardy & Son, Big Rock.
Unicoi County.....	Cal Garland, Unicoi.
White County.....	J. S. Officer, Sparta.
Wilson County.....	J. L. Chambers, Lebanon. Herbert Young, Shop Springs.

BREEDERS OF DRAFT ANIMALS.

PERCHERON.

Bedford County.....	J. N. Smith, Wartrace.
Bradley County.....	S. J. Fleemen, Cleveland.
Cannon County.....	C. Groble, Woodbury.
Cocke County.....	Jones and Vaughn, Newport.
Franklin County.....	Dr. Templeton, Winchester. Fred Zimmerman, Belvidere.
Grainger County.....	Wm. Tinsley, Rutledge.
Greene County.....	W. H. McCray, Greeneville. Wosly Fox, Chuckey.
Hamblen County.....	J. A. Hurley, Morristown.
Hancock County.....	C. D. Alebr, Sneedville.
Hawkins County.....	Dan Hileman, Mooresburg. J. R. Sanders, Persia.
James County.....	J. D. Thatcher, Ooltewah.
Johnson County.....	A. C. Cole, Mountain City. W. W. Newberry, Mountain City. B. G. Wills, Mountain City.
Meigs County.....	T. G. Davis, Decatur.
Moore County.....	Lem Motlow, Lynchburg. J. B. Motlow, Lynchburg.
Morgan County.....	Horsebreeders' Association, Wartburg.
Overton County.....	A. C. Terry, Henard.
Putnam County.....	Berch Dowell, Cookeville. William Stewart, Cookeville.
Rutherford County.....	W. O. Insell, Murfreesboro.
Unicoi County.....	J. A. Anderson, Unicoi. Cad Blevins, Unicoi.
Wilson County.....	Dr. W. L. Hancock, Lebanon. R. 4.

CLYDESDALE.

Greene County.....	O. H. Doyle, Chuckey.
Jackson County.....	B. C. Butler, Gainesboro.
Putnam County.....	L. W. Myers, Cookeville.

BREEDERS OF HOGS.

DUROC JERSEY.

Bedford County.....	C. N. Kimbro, Shelbyville. Robt. McMillan, Shelbyville.
Benton County.....	W. H. Hicks, Big Sandy.
Cannon County.....	W. K. Keele, Woodbury.
Cheatham County.....	C. F. Hallums, Pleasant View.
Cocke County.....	S. H. Stanberry, Newport.
Cumberland County....	James Smith, Crossville. C. G. Block, Crossville. A. L. Garrison, Crossville.
Davidson County.....	C. H. Gillock.
Fentress County.....	S. H. Beath, Banner Springs.
Franklin County.....	John Basehart, Winchester.
Giles County.....	Ranck Bros., Pulaski. J. A. Noel, Greeneville.
Greene County.....	John Smelcer, Midway. J. H. Leaman, Lee Valley.
Hancock County.....	H. R. Nelson, Rogersville.
Hawkins County.....	A. P. Davis, Rogersville. P. R. Hoover, Gainesboro.
Jackson County.....	A. C. Cole, Mountain City.
Johnson County.....	H. P. Keller, Ripley.
Lauderdale County....	Larkin Whitaker, Mulberry.
Lincoln County.....	E. T. Hunter, Decatur.
Meigs County.....	J. F. Baxter, Mulberry.
Moore County.....	F. P. McCormick, Livingston.
Overton County.....	R. M. Breeding, Cookeville.
Putnam County.....	Mr. White, Milton.
Rutherford County....	Fox Bias, Sevierville.
Sevier County.....	J. M. Freed, Riddleton.
Smith County.....	Porter Dunlap, Dover.
Stewart County.....	J. G. Walker, Big Rock.
Trousdale County.....	Bennett Bros., Hartsville.
Weakley County.....	M. W. Robinson, Martin.
Wilson County.....	T. S. Dillon, Lebanon.

BERKSHIRE.

Bedford County.....	J. M. Tune, Shelbyville.
Benton County.....	J. C. Rushing, Camden.
Bradley County.....	G. A. Fain, Cleveland.
Cocke County.....	Ed C. Burnett, Newport.
Coffee County.....	A. M. Woodson, Tullahoma.
Cumberland County....	James Smith, Crossville. C. E. Snodgrass, Crossville.

Fentress County.....	V. H. Pile, Pall Mall.
Franklin County.....	H. Lucas, Huntland.
Giles County.....	J. R. D. Williams, Aspen Hill. S. C. Appleby, Pulaski.
Grainger County.....	G. McHenderson, Rutledge.
Greene County.....	C. E. Smith, Afton. W. B. Duck, Greeneville.
Hamilton County.....	R. B. Cook, Chattanooga.
Hancock County.....	James Williams, Sneedville.
Hawkins County.....	T. J. Cantwell, Treadway.
Houston County.....	C. D. Askew, Stewart.
Jackson County.....	C. S. Myers, Stone.
James County.....	Ed Robinson, Ooltewah.
Johnson County.....	J. S. Donnelly, Shouns.
Lauderdale County.....	Ed Johnson, Ripley.
Lawrence County.....	J. F. Hoobs, Lawrenceburg.
Lincoln County.....	J. J. Holman, Mulberry.
McNairy County.....	Clem Lea, Selmer.
Maury County.....	Alf Thomas, Columbia.
Overton County.....	L. R. Mullins, Nettle Carrier.
Putnam County.....	W. R. Medley, Silverpoint. J. H. Verble, Cookeville.
Rutherford County.....	R. M. Rucker, Lascassas.
Smith County.....	Cob Porter, Riddleton.
Stewart County.....	Will Lewis, Cumberland City.
Trousdale County.....	M. D. Rickman, Hartsville.
Unicoi County.....	J. W. Lucas, Unicoi.
White County.....	J. D. Stewart, Sparta.
Williamson County.....	G. A. Lillie, Franklin.
Wilson County.....	C. L. Gray, Lebanon.

POLAND CHINA.

Bedford County.....	Neely Coble, Shelbyville. Bailey Marks, Shelbyville.
Benton County.....	D. B. Thomas, Camden.
Cannon County.....	R. B. McBroom, Woodbury.
Cheatham County.....	W. M. Pegram, Ashland City.
Coffee County.....	R. S. Brandon, Normandy.
Decatur County.....	Grover Martin, Bath Springs.
Fentress County.....	Jesse Beath, Grimsley. W. M. Johnson, Forbus.
Franklin County.....	Gudgelman Bros., Winchester.
Giles County.....	J. P. Abernathy, Pulaski. Charlie Smith, Lynnville.
Grainger County.....	W. A. Frazier, Leas Springs.
Greene County.....	N. C. Myer, Greeneville.
Hawkins County.....	App Davis, Rogersville.
Houston County.....	J. L. Weaver, Stewart.
James County.....	Asa Ball, Ooltewah.
Johnson County.....	John Willson, Mountain City.

Lauderdale County.....	Clyde Johnson, Ripley.
Lincoln County.....	E. C. Shofner, Mulberry.
McNairy County.....	J. H. Moss, Selmer.
McMinn County.....	B. W. Cantrell, Etowah. C. L. Hutsell, Etowah.
Moore County.....	H. Rees Blythe, Lynchburg.
Overton County.....	H. A. Smith, Henard.
Putnam County.....	H. D. Whitson, Cookeville. Hughs & Pointer, Cookeville.
Rutherford County.....	Tom Brown, Murfresboro. T. E. Broder, Murfresboro.
Sevier County.....	J. V. McMahon, Sevierville.
Smith County.....	Luggle Bros., Grant. Charlie Wright, Brush Creek.
Stewart County.....	R. T. Smith, Dover. A. W. Brewer, Tharpe.
Trousdale County.....	Britton Stubblefield, Hartsville.
White County.....	J. S. Officer, Sparta.
Wilson County.....	R. H. Young, Lebanon.

A STIMULUS TO STUDY.

The value of a short course at the agricultural college does not lie chiefly in the knowledge of better farming methods which are given the boys and girls, but in stimulating in them the desire for further study in self-culture. The main thing to be done at the short course is to get hold of some of the most important general principles in farming, those relating to the soil, tillage, management of crops, live stock, etc. This will show how much there is to learn about the common things of the farm and how little time there is to learn it. But the eight or ten weeks will show one how to study and create in one the desire to learn so that when he returns to the farm he can continue the good work so well started.—*Farm and Home*.

SHELTER THE DAIRY COW.

It is a well-known fact that the best and most profitable dairy cows do not carry much meat. The feed consumed is used for milk and relatively little as a covering for their own bodies. It then stands to reason that a dairy cow cannot do her best as an economic milk-producer unless she has good shelter. It need not be anything fancy and expensive, just so it is comfortable, healthy and sanitary. It is poor economy to compel a dairy cow to rustle for her feed in the snow-covered cornstalk field in stormy and cold weather.

SUMMARY OF SEPTEMBER CROP REPORT.

**T. F. Peck, Commissioner, Department of Agriculture,
Nashville, Tenn., October 1, 1912.**

Reports from crop correspondents in eighty-seven of the ninety-six counties in Tennessee indicate that crop conditions in the state are hardly as good at this season of the year as at the same time last year.

There was an excess of hot, dry weather during September, and cotton and other crops matured fast. Cotton picking was begun during the last weeks of September, but will not become general until the first of October. The cotton crop was damaged some by the hot, dry weather, and the yield will not equal that of last year. Late corn was also damaged by the dry weather of September, and the yield will be reduced in consequence.

Rains toward the latter part of the month helped clover and pastures. Stock peas are reported in good condition and a good yield assured.

The tobacco crop in the state is reported in good condition, and it is believed that the crop will equal that of last year.

The peanut crop will be about equal to that of last year. This is a staple and profitable crop along the Tennessee River, and more attention is being given it each year.

The growth of alfalfa is on the increase in the state, and in many counties are reported good stands, from which four and five cuttings a year are obtained.

Live stock is reported in good condition, with the exception of outbreaks of hog cholera in some sections of the state. A few isolated cases of glanders have been reported; also black leg, lip and leg ulceration and bovine tuberculosis. It appears that anthrax has been entirely suppressed where it appeared in Shelby County, and Texas fever tick eradication work and sheep scab eradication are progressing satisfactorily in every county where these diseases are present.

More interest is being manifested in the breeding of better and more live stock than heretofore. This is accounted for in part by the

high prices now prevailing. It is the opinion of those who are in position to know that Tennessee has fewer hogs to be marketed than at any time in recent years.

Below is the summary, for comparison, of the reports of this Department for September, 1911 and 1912:

	1911 Per Cent.	1912 Per Cent.
Cotton, condition.....	79	70
Corn, condition.....	83	77
Tobacco, condition.....	73	84
Stock peas, condition.....	85	82
Peanuts, condition.....	79	76
Clover, condition.....	65	77
Live stock, condition.....	88	89
Alfalfa, condition.....	79	84

SEPTEMBER CROP REPORT FOR 1912.

T. F. PECK, Commissioner of Agriculture

DISTRICT	COUNTY	Cotton— condition.	Corn— condition.	Tobacco— condition.	Stock Peas— condition.	Peanuts— condition.	Clover— condition.	Live Stock— condition.	Alfalfa— condition.
A Alluvial Plain of the Mississippi River and Plateau Slope of West Tennessee.	Lake	68	75	....	90	....	85	90	90
	Obion	78	75	92	57	75	93	88	100
	Dyer .....	....	....	....	....	....	....	....	....
	Lauderdale	67	82	90	90	100	83	87	95
	Tipton	70	68	100	93	....	83	84	100
	Shelby	68	63	....	95	....	100	85	100
B Brown Loam Table- lands, Middle Counties of West Tennessee.	Weakley	67	73	79	69	78	67	83	....
	Gibson	75	70	....	80	....	80	85	80
	Crockett	60	78	....	83	....	83	88	....
	Madison	70	90	100	100	....	90	100	100
	Haywood	63	57	....	57	....	....	78	....
	Hardeman	80	75	....	70	50	70	92	90
	Fayette	68	70	....	64	90	78	86	....
C Summit Region of Watershed, West Ten- nessee.	Henry	55	78	70	68	....	65	78	....
	Carroll	47	78	50	50	73	75	92	....
	Henderson	70	64	80	80	60	53	78	....
	Chester	58	73	....	84	....	69	82	....
	McNairy	62	70	....	73	....	25	80	....
D Valley of Tennessee River, West and Mid- dle Tennessee.	Stewart .....	....	78	75	75	....	70	85	....
	Benton	50	65	....	50	60	50	83	....
	Houston .....	....	72	74	74	85	78	93	83
	Humphreys .....	....	83	75	73	73	78	88	....
	Decatur	70	70	....	80	80	85	85	....
	Perry	60	62	....	67	72	72	90	....
	Hardin	68	78	....	80	....	60	78	....
E Highland Rim of Mid- dle Tennessee, West- ern Subdivision.	Montgomery .....	....	78	68	75	....	78	78	83
	Robertson .....	....	75	80	100	....	60	90	....
	Cheatham .....	....	88	78	93	....	68	93	....
	Dickson .....	....	100	100	90	....	100	100	....
	Hickman	65	75	73	75	73	78	93	50
	Lewis .....	....	70	90	79	74	74	93	....
	Wayne .....	....	75	....	90	....	....	90	....
	Lawrence	80	68	....	80	88	90	95	....

SEPTEMBER CROP REPORT FOR 1912—Continued.

T. F. PECK, Commissioner of Agriculture

DISTRICT	COUNTY	Cotton— condition.	Corn— condition.	Tobacco— condition.	Stock Peas— condition.	Peanuts— condition.	Clover— condition.	Live Stock— condition.	Alfalfa— condition.
F Highland Rim of Middle Tennessee, Eastern Subdivision.	Macon	75	68	63	85	75	85	85	85
	Clay	75	85	85	85	85	85	85	85
	Pickett	80	68	95	88	90	90	90	90
	Overton	65	75	75	76	90	95	95	95
	Jackson	80	90	79	80	90	90	90	90
	Putnam	70	80	85	80	90	90	90	90
	DeKalb	62	90	77	85	62	93	80	80
	White	78	85	85	80	90	90	90	90
	Warren	90	68	83	90	77	82	85	85
	Coffee	80	80	95	90	85	90	80	80
G Central Basin.	Franklin	85	85	90	90	85	85	85	85
	Sumner	73	90	100	50	100	100	100	100
	Trousdale	100	63	100	63	100	100	100	100
	Smith	63	88	75	95	60	83	85	85
	Davidson	88	75	95	60	83	85	85	85
	Wilson	50	68	40	33	75	83	50	50
	Williamson	75	85	88	88	75	88	95	95
	Rutherford	75	75	90	90	80	85	85	85
	Cannon	85	80	91	84	93	60	60	60
	Mauzy	65	75	93	80	90	80	80	80
	Marshall	80	70	75	60	90	80	83	80
	Bedford	81	84	84	90	98	98	98	98
H Cumberland Table-land.	Giles	75	95	63	59	87	87	87	87
	Fentress	76	70	98	70	65	65	65	65
	Morgan	75	80	80	75	100	100	100	100
	Cumberland	75	100	100	95	100	100	100	100
	Van Buren	75	80	80	75	100	100	100	100
J Cumberland Table-land and Valley of East Tennessee.	Grundey	75	100	100	95	100	100	100	100
	Claiborne	78	85	80	78	95	95	95	95
	Campbell	67	70	63	90	93	89	89	89
	Anderson	75	88	88	90	90	90	90	90
	Rhea	80	83	90	80	83	100	90	90
	Bledsoe	90	100	100	75	80	85	85	85
	Squatchie	90	75	60	90	90	90	90	90
	Marion	65	60	60	75	75	75	75	75
K East Tennessee Valley.	Hamilton	88	80	85	88	90	90	90	90
	Sullivan	83	87	87	90	90	90	90	90
	Hawkins	100	100	100	100	100	100	100	100
	Hancock	93	100	95	95	98	85	85	85
	Washington	87	88	88	100	80	85	90	90
	Hamblen	85	88	95	90	95	95	95	95
	Grainger	80	75	80	60	83	73	73	73
	Union	93	93	93	88	98	98	90	90
	Jefferson	80	90	90	85	80	90	90	90
	Knox	80	83	60	50	95	85	85	85
	Roane	75	80	80	60	100	100	100	100
	Loudon	70	77	87	60	93	93	93	93
	McMinn	80	75	80	53	90	90	90	90
	Meigs	80	88	50	40	70	95	100	100
	Bradley	90	85	85	75	75	90	80	80
	James	92	75	85	90	92	98	90	90
	Johnson	85	100	100	95	90	95	95	95
L Valley of East Tennessee and Unaka Region.	Carter	95	88	93	87	91	91	91	91
	Unicoi	75	79	82	80	93	91	80	80
	Greene	80	83	85	95	75	82	92	100
	Cocke	50	50	75	73	50	83	90	90
	Sevier	80	79	70	75	90	96	96	96
	Blount	80	75	82	75	75	75	75	75
	Monroe	80	75	82	75	75	75	75	75
	Polk	80	79	70	75	90	96	96	96
	Polk	80	79	70	75	90	96	96	96

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IN THIS ISSUE:

Agricultural Possibilities of Middle Tennessee.

Knapp Agricultural Day.

Scientific Farming in Lawrence County.

Tennessee's Live Stock. "Pink Eye" in Cattle.

Growing Potatoes in Cumberland County.

October Crop Report.



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AGRICULTURAL POSSIBILITIES OF MIDDLE TENNESSEE.

ADA COOKE SETTLE, IN WOMAN'S EDITION OF NASHVILLE BANNER.

"When tillage begins, other arts follow. The farmers, therefore, are the founders of human civilization."—*Daniel Webster*.

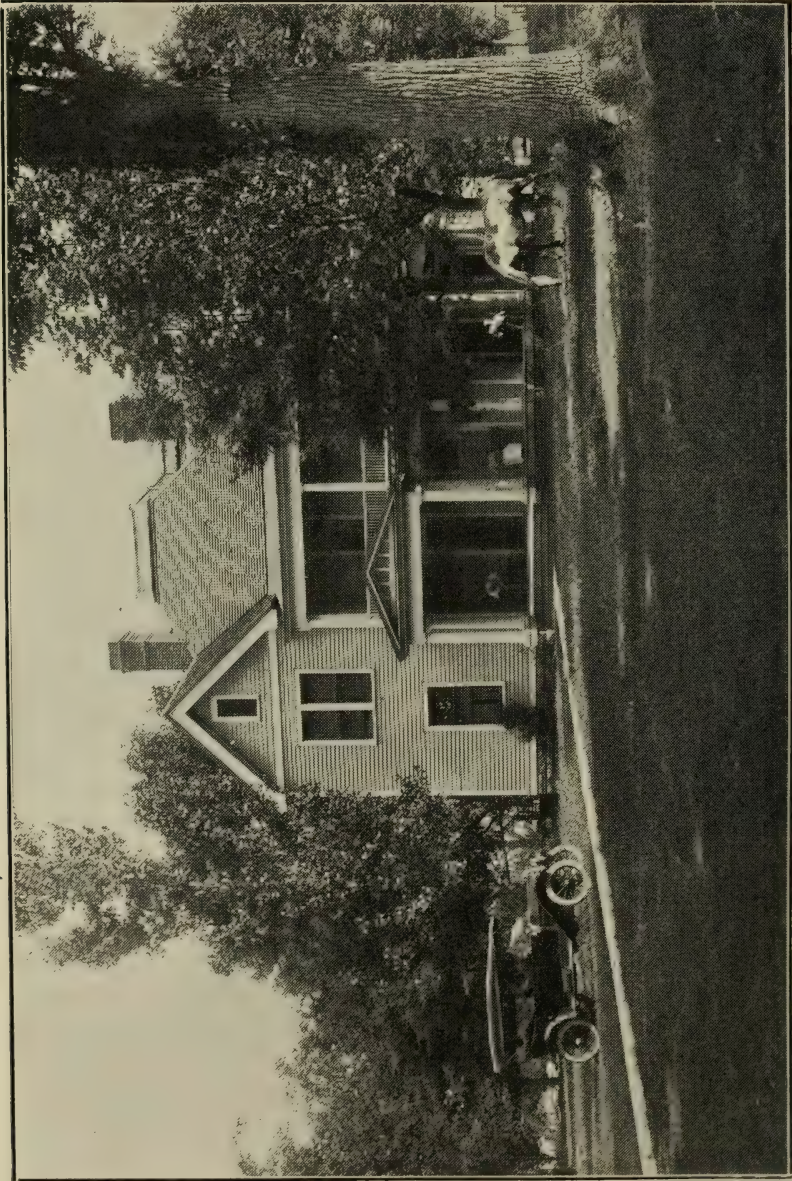
The problems of agriculture, like those of other vocations, change with the times. The primitive farmer, with his simple methods, coped with simpler conditions than face the farmer of today.

Clearing and breaking virgin forest soil must have seemed a big enough undertaking to the first farmers of America; but now, where the forests that remain to us are in careful conservation, and the immense population of an entirely settled country demands of the agriculturist studiously concentrated farming, there are far more serious questions to be met in cultivating land than the old-time "tiller of the soil" could have dreamed the future held.

While it was generally known, even from the earliest times, that irrigation and stirring of the soil aided the growth of plants, and that certain organic bodies contained properties stimulative to the soil, little was known of the chemistry of plant life. Not until the beginning of the nineteenth century were those great discoveries made which have revolutionized farming and made of it the science it is today. For there is nothing haphazard about present-day farming. Beginning with the first real chemical discoveries, gradual dissemination of knowledge bearing upon all phases of agricultural life took place until today the up-to-date farmer, with his positive because clearly authenticated ideas about tillage, diversification, hygiene, etc., is as sure of his crop as he is of his land. His thought is not how many acres, but how many bushels to an acre. Such expressions as conservation, intensive farming, crop rotation, etc., evidence the farming spirit of the day.

Most of the world has its hat off to the farmer just now, and the farmer knows it. The popularity of agriculture as a calling becomes more pronounced every day. The immense government outlay upon its agricultural department; the thorough working of the different state departments in collecting and diffusing information pertaining to agricultural life; the farmers' institutes and short courses in agriculture; the demonstration farms and agricultural trains are all proving vital factors in encouraging an age of "back to the farm" life that is proving a modern renaissance of sane living with agriculture for its basis.

That Middle Tennessee should be wide-awake to the advantages



Home of Mr. Walter Hancock in Wilson County.
(Cut loaned by Mr. A. J. Casey, Lebanon.)

such increased knowledge and interest lend, is not surprising, for as an agricultural center it stands in the first rank. The greatly diversified surface of this central division of the State accounts in part for the wonderful variety of agricultural products from the forty-one counties it embraces. Every kind of scenery greets the eye of one in crossing Middle Tennessee. There lofty mountains with madly rushing streams, peaceful hillside and valleys where the waters flow gently, and level lands rendered agriculturally ideal by perfect natural drainage.

Our gifted Tennessee poet, John Trotwood Moore, has sensed the beauty of this region as no other writer has done, and in one of his poems describes as follows a Middle Tennessee landscape:

“Sun-shimmer’d fields of dreaming green,
A sky blue-domed in azure sheen,
And hill on hill dipped deep between;
And with soft sighs the breezes rise
To waft cloud kisses to the skies.”

When a Middle Tennessean leaves his native State for a sojourn of any length in other sections, he is apt to be troubled with a homesickness that is as much a longing for the peculiar loveliness of our landscape as anything else. In comparison with the dreamy beauty of a Middle Tennessee farm scene, the prodigal lands of the Middle West appear but desolate prairie; East and North seem poor and barren; the tropical splendor of California unreal and artificial. There is a glamour in our sunshine that mellows and enriches all it bathes.

But it is not merely a scene of beauty we possess. It is a land of beauty and wealth combined. There is not a crop grown above the twenty-fifth parallel that some portion of Middle Tennessee cannot furnish. Tobacco, corn, wheat, barley, rye, clover, alfalfa, cotton, peanuts, potatoes, and all kinds of vegetables, perfect fruit of every variety contribute to make this section preeminently rich in products of the soil.

Our stock alone has made Middle Tennessee famous. Fine blooded horses and superior cattle are as much sought by buyers from other sections in Middle Tennessee today as in any other section of the United States. Indiana, Illinois, Missouri, and Ohio, all famous stock-raising states, send buyers here regularly. The fact that blue-grass here is indigenous, and that the cultivated grasses, such as clover, herds grass, timothy, millet, orchard grass, soy beans and cow-peas, are easily and cheaply grown, is a potent factor in the successful stock raising common to Middle Tennessee. A grazing season lasting nearly nine months in the year is an important factor in con-

sidering the possibilities of Middle Tennessee stock farming. There are thousands of acres in Tennessee which should grow bluegrass, and furnish pasture for the fine stock our accessibility to the larger markets makes always profitable. We have in Middle Tennessee what even Kentucky, famous for fine stock, lacks—abundant clear running water.

But with all that has been accomplished along these lines in this section, the industry of raising fine horses and blooded cattle is as yet in its infancy. The income from an increased production of fine horses, mules, cattle, and sheep would reach far into the millions.

Statistics show that those countries having the greatest agricultural prosperity lay great stress upon live stock raising. Denmark, Holland, and the Channel Islands, all prosperous countries, are examples in point. England and Scotland export yearly to the United States great numbers of fine stock for breeding purposes. There is no reason why the United States should not excel in its stock as do these countries, and there is no reason in the world why Middle Tennessee, with its rolling, grass-covered surface, should not produce as fine horses, cattle, and sheep as any country in the world. We already have a national reputation for producing fine horses and Jersey cattle. We should emphasize this industry and conserve to the soil the fertility that only live stock raising insures. Grazing grass is the only restorative to impoverished soil. Southern bluegrass will grow 500 pounds of beef to an acre. With its natural advantages, Middle Tennessee ought to have such a reputation for growing fine beef cattle that the railroads would furnish low rates to the Northern and Eastern markets for the train loads we could supply.

As for dairy cattle, a comparison with Michigan, world-famous for its butter, shows that our average production is not much below. Middle Tennessee's possibilities in this line are as great as any section's, and doubtless in the near future we will take front rank.

Cheap feed, such as corn, cabbage, carrots, sorghum, bluegrass, red top clover, and Bermuda grass are easily grown, making it possible to raise and feed a cow for a third less than in Michigan, Ohio, Indiana, Wisconsin, New York, or any of the States of the North and East.

There are great possibilities in the future for hog raising in Middle Tennessee. The State as a whole has been called the greatest State in the Union for this industry on account of the mild climate, long open season, and natural feed, such as acorns, pawpaws, beech-nuts, persimmons, etc. Yet we import from the Middle West a large amount of the great quantity of pork we consume.



Wilson County Prize Winners.
(Cuts loaned by Mr. A. J. Casey, Lebanon.)

Sheep raising is another branch of the live stock industry possible of great returns to Middle Tennessee. Here again the climate and long grazing season furnish most favorable conditions for profitable pursuit of this industry.

FIELD PRODUCTS.

In Middle Tennessee, with its varied surface and soil conditions, there are grown sixty-seven different field crops—among them corn, wheat, oats, rye, barley, buckwheat, potatoes, cloverseed, broom corn, flax, beans, peas and sorghum. Of these corn stands first. Over one-half the corn produced in Tennessee is grown in the middle division of the State.

So far as future yields are concerned, there is no reason why the great increase in acreage and production of the last ten years should not be exceeded by many thousands of bushels. Southern people are willing to pay more for Southern than Western corn because it makes better bread, and the samples of Middle Tennessee corn exhibited at the State Fair last year showed why.

Tobacco growing as an industry promises to bring larger and

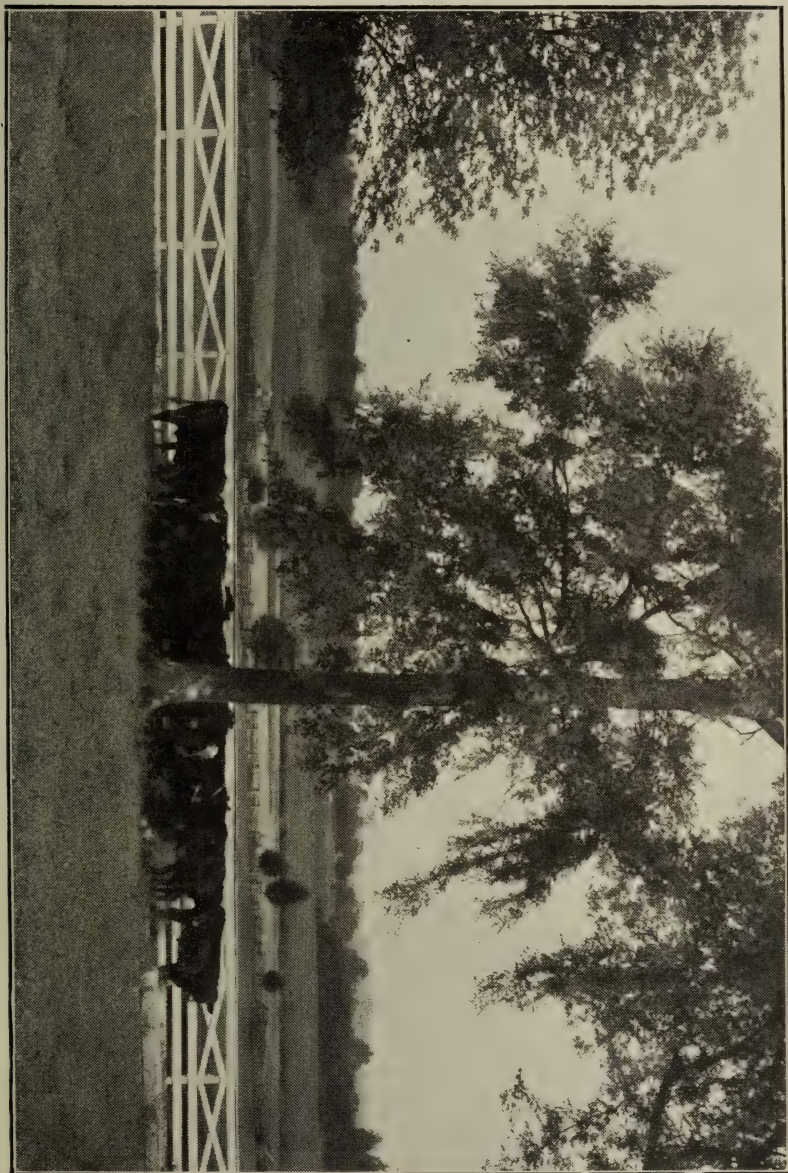
larger returns to Middle Tennessee, which grows as fine tobacco as any section of the United States. Tennessee tobacco is shipped to all parts of the world, and Montgomery and Robertson counties, in the dark tobacco district of Tennessee, are the largest producers of the weed. Tennessee tobacco contains more nicotine than any other tobacco grown in the United States except that grown in Kentucky, adjoining the dark tobacco district of Tennessee, and this makes it valuable as an export tobacco. Middle Tennessee promises to be one of the largest tobacco and snuff manufacturing centers in the world. There are several large establishments in Nashville and Clarksville, and the latter place is one of the big tobacco markets of the world. Tennessee in 1910 produced 64,600,000 pounds, valued at \$5,500,000.

Peanut growing brings a large return to several counties in the middle division of the State. The average annual production for the State is nearly 1,000,000 bushels, a great part of which is produced in the counties of Humphreys, Perry, Wayne, Hardin, Decatur and Benton. This industry is susceptible of a large increase, and is destined to be one of the big money crops of several other counties in the middle division of the State.

Truck gardening and fruit growing are becoming more general and more profitable all the time. Middle Tennessee is particularly adapted to these two branches of agriculture. Our fruits and vegetables take prizes in all competitions. At the World's Fair at St. Louis, Alex Ankenbauer & Son, who live near Nashville, won prizes on egg plants, tomatoes, and peppers. A Tennessee watermelon was the best at the fair, and Walters Bros., of Nashville, received the highest award on apples. The Highland Rim of Middle Tennessee and the Cumberland Plateau are destined to be the great fruit-growing sections of the South. The soil of these sections, where land can be bought as cheap as \$5.00 an acre, can produce as good apples as can be grown in Idaho, Colorado, Washington, and other states famous as fruit growing sections, and where land used for this purpose sells as high as \$1,500.00 an acre. All this section needs to be developed along this line is to get experienced orchardists to take up the land and begin the development of the industry.

There are soils in Middle Tennessee that grow as fine cantaloupes as the famous Rocky Ford section of Colorado, and our strawberries are excelled by none in flavor or size. Fruit growers' associations would enable the producers to place their fruits on the Northern markets at small cost and at a time to bring fancy prices. Nature gives us a two or three weeks' advance of the Northern crop.

Poultry raising is a constantly growing Middle Tennessee industry.



Scene on Farm of Mr. Walter Hancock in Wilson County.
(Cut loaned by Mr. A. J. Casey, Lebanon.)

The recent meeting in Nashville of the American Poultry Association, which brought to the city the most representative poultry men of the United States, emphasized the importance of this industry, and the large attendance from points in Tennessee indicated the extent of the industry as well as its possibilities.

All the large poultry dealers keep buyers on the road, and farmers are devoting more and more time to this important allied branch of agriculture. Tennessee poultry products are worth more than \$6,000,000 yearly. There are many sections of the State from which carloads are shipped daily to the Northern and Eastern markets.

AGRICULTURAL DEPARTMENT.

The Agricultural Department of the State of Tennessee is a very live and busy part of State official life. Gov. Hooper has always had farming interests at heart, and has always taken an active part in the promotion of all movements for the benefit of the farmer. His conception of the Memphis-to-Bristol Highway, the few missing links of which will soon be completed, proves his sagacity. Such a road when completed is sure to stand an enduring monument to the wisdom of a wise and earnest Chief Executive, who realizes that in good roads, making of easy access the products of the farm to the market, lies much of the prosperity of the farmer, and with it the State.

Capt. Thomas F. Peck, Commissioner of Agriculture for Tennessee, has shown himself a towering figure among Tennesseans of recent years whose aims lie in their State's advancement. He was reared on a farm, and not only has a knowledge of farming gained from experience, but is also a scientific farmer, and knows how to impart his knowledge to the farmers of the State. He is a man of executive ability, as shown by the great work done during the last year by him and his official family for the spread of agricultural knowledge among the farmers of the State. He has made a record since going into the office of Commissioner of Agriculture that has attracted the attention of the entire State as well as adjoining States.

Capt. Peck comes of pioneer East Tennessee stock, so his love for his native State and belief in its great possibilities are a natural inheritance. His work as Commissioner of Agriculture has had behind it the purpose and desire to bring fully into her own Tennessee and all her resources.

Commissioner Peck served as Captain of a company in the Spanish-American war, and the title of "Captain," by which many address him, indicates his rank as a soldier. The power for executive command shown by the officer is evidenced in the ease with which the Commissioner directs the large force of his department in the various branches



Wheat Threshing in Wilson County.
(Cut loaned by Mr. A. J. Casey, Lebanon.)

covering the State. He is one of the busiest men in Tennessee, and can do more different kinds of work in a day than the average man allots to three.

Commissioner Peck's earnest wish since taking his office has been to unite in one big working whole the agricultural interests of Tennessee. To this end he has sent out weekly to the country and daily newspapers of the State interesting and instructive bulletins dealing with farming in general, soils, live stock on the farm, crop rotation, seed selection, etc. In this way many farmers have been interested that might not otherwise have been reached. These letters are published every week by more than one hundred newspapers in the State, so that the audience of the Commissioner is numbered weekly by many thousands.

Capt. Peck's desire is and has been to see established in every county in the State a county demonstration farm, to place in convenient reach of the farmers of the counties the results of the investigations and work of the experiment stations, and to show them what can be done on soil similar to that on their own farms under scientific direction. Such demonstration farms as advocated would tend to an improvement in all things pertaining to farm life, and would bring an increased income to the farmer, consequently a more comfortable and

pleasant life on the farm, and an inducement to the young people to remain on the farm, where comfortable, and, in this day, luxurious living is more easily attainable than in the crowded cities.

Isolated farm life is rapidly becoming a thing of the past. The rural free delivery brings the farmer's mail daily; the telephone annihilates the distance between neighbors; automobiles and good roads are making of travel to the nearest town a daily event instead of occasional. The different associations and clubs are strong factors in bringing into closer relationship the farmers of a community. The work of farmers' institutes, under the direction of the Department of Agriculture, is spreading a knowledge of scientific farming, and there is a general and growing interest over the whole State in matters agricultural, and the work of Commissioner Peck along this line is a matter of congratulation with all Tennessee.

The work of the Bureau of Immigration, operating under the direction of the Department of Agriculture, has done much to spread in other states a knowledge of the vast resources and opportunities of Middle Tennessee. Exhibits sent during last winter into the North and Northwest have already borne fruit in the bringing to the State many good farmers from those sections. Much valuable printed matter in the form of maps, booklets, and bulletins concerning the various counties was distributed.

The force of the Department of Agriculture includes, beside Commissioner Peck: T. G. Settle, Chief Clerk; A. L. Garrison, Chief Feed and Seed Inspector; Dr. George R. White, State Live Stock Inspector; Samuel E. Reynolds, Assistant Commissioner for East Tennessee; Jesse Tomlinson, Assistant Commissioner for Middle Tennessee; R. T. DeBerry, Assistant Commissioner for West Tennessee; J. W. Wynn, Feed and Seed Inspector for East Tennessee; Noble C. White, Feed and Seed Inspector for Middle Tennessee; G. M. Bentley, State Entomologist and Plant Pathologist; J. S. Ward, Apiary Inspector; H. N. Hardeman, stenographer.

AGRICULTURAL TRAIN.

During the fall of 1911 Commissioner Peck operated a farm demonstration train through the counties of East Tennessee, and the venture was so successful that it was tried this year, extending over all the roads of the State. This train was known as the Agricultural Special, and left Nashville on Monday, July 1, over the Louisville & Nashville Railroad, making all points in Middle and West Tennessee on that line. The Illinois Central then handled the train over its lines in Tennessee, followed by the Southern, Mobile & Ohio in West Ten-



Residence of Mr. George J. Everston, Wilson County.
(Cut loaned by Mr. A. J. Casey, Lebanon.)

nessee; the Nashville, Chattanooga & St. Louis in West and Middle Tennessee, and then over all the roads in East Tennessee, concluding the itinerary in Middle Tennessee over the lines of the Tennessee Central.

The train consisted of nine cars, including a sleeper, dining car, Arms palace stock car, demonstration stock car, soils and crop car, dairy car, health car, domestic science car, and entomology car. This equipment was furnished free of charge by the railroads of the State, with the exception of the Pullman sleeper. The railroads cooperated with Commissioner Peck in the operation of this train, and assisted in every way to make it a success. The train was on the road forty-seven running days, and made over 200 scheduled stops, and was greeted everywhere by large crowds. A conservative estimate of the number who saw the exhibits on the train and heard the lectures places it at 5,000 per day, or 235,000 people.

MIDDLE TENNESSEE FARMERS' INSTITUTE.

The Middle Tennessee Farmers' Institute is a very live and useful organization, which meets in Nashville each December. Sam N. Warren, of Spring Hill, is President, and Robert Gallagher, of Shelbyville, is Secretary. The programs are always interesting.

The Boys' Corn Club is an auxiliary of the Institute, and has

aroused great enthusiasm among the young corn growers of the State.

The Middle Tennessee Home-Makers' Association is also a branch of the Institute. It was organized in Nashville at the last meeting of the Institute, with the following officers: Mrs. J. Taylor Stratton, Madison, President; Mrs. Clara Boone Mason, Prospect, Vice President; Mrs. Myra W. Tandy, Lawrenceburg, Secretary. The following Executive Board was elected: Mrs. John Walker, Wartrace; Mrs. John Thompson and Mrs. T. G. Settle, Nashville.

The object of the Home-Makers' Section is to bring into closer communion the housekeepers of Middle Tennessee, to stimulate interest in true home-making, and to encourage the study of home economics in all the schools of the State. Any woman in Middle Tennessee is eligible to membership.

For an initial convention, the sessions last December were characterized by unusual interest. There was a sturdy, dependable spirit shown by each woman in attendance to develop her own home and help her neighbor develop hers. The papers read and addresses delivered were most interesting, and a thorough covering of the ground of home economics was afforded by the program. The section co-operated with the Woman's Board of the State Fair to the great benefit of all concerned.

The next sessions of the Middle Tennessee Farmers' Institute will be held in the Hall of Representatives at Nashville, December 1, 2 and 3.

MIDDLE TENNESSEE FARMERS' INSTITUTE.

Commissioner of Agriculture T. F. Peck, in cooperation with Col. Robert Gates, representing the railroads, has selected December 3, 4 and 5 as he daes for holding he Middle Tennessee Farmers' Institute this year.

The sessions will be held in the Hall of Representatives at the State Capitol, Nashville. The program is now being prepared and will be published in the papers in a few days.

The Home Making Section will have sessions in the Senate Chamber at the same time. An interesting program is being arranged.

The basis of representation will be the same as last year—2½ delegates for each thousand of rural population.

Alfalfa is a fairly heavy feeder on lime and grows best where there are large quantities of lime in the soil.

KNAPP AGRICULTURAL DAY.

The 148,000 teachers and the 7,000,000 pupils of the South are being urged by their educational and agricultural leaders to assemble 3,000,000 farmers, their families and friends, in the 89,000 school houses on November 27 for an hour, in order to survey and review their agricultural resources and achievements, and to express their appreciation of the services of one of their greatest benefactors. Agriculture is worthy of this consideration, for the farmers of the nation have this year produced ten billion dollars worth of crops to feed and clothe nearly 100,000,000 people here, with a surplus for other nations.

Knapp Agricultural Day is the official designation. The South wishes to honor the memory of Dr. S. A. Knapp as the founder of the Demonstration Work and the Boys' and Girls' Clubs. This is fitting, because 100,000 demonstrators are making large crops on their farms and Corn Club boys are attracting world-wide attention by growing more than 225 bushels on one acre at low cost. The indications are that several of the 75,000 boys will this year break all records. It is fitting, because 25,000 girls, in the harvest season, are filling pantries with wholesome food and selling the surplus. It is a duty, because Dr. Knapp taught a new method in agriculture, and the lessons must be more widely impressed and unfailingly transmitted. Representatives of England, Russia, Brazil, South America, Siam and Argentina have come to learn them. It is high time for American schools to take the lead in these ideas.

There is to be a Knapp School and a Knapp Farm near Nashville and in connection with Peabody College. When \$150,000 is collected for the farm and school building, \$250,000 will be added for endowment of the School of Country Life by the General Education Board. No other such institution exists. It will start out with the purpose of reaching and helping every school and farm in the South. This institution will be a laboratory, a clearing house, and an assembling place for agricultural and educational workers. Eventually it will have demonstration schools in each State and county teaching its lessons. It will be a working, living memorial, but in a conspicuous place will also appear a life-sized statue of Dr. Knapp.

What vast possibilities loom up, if the people of the whole South will annually contemplate agricultural matters for one hour! The State and County Superintendents of Education are taking the lead in this movement. It will be a worthy tribute to a worthy man. The name of each contributor will be kept as a grateful record.

SUGGESTED PROGRAM FOR KNAPP AGRICULTURAL DAY.

(November 27, or the nearest Friday to that date.)

1. State Song, or America, by the School.
2. How the Bible Teaches Agriculture, by an Invited Minister.
3. What Great Poets Have Sung About the Farm, selections by class of pupils.
4. How Dr. Knapp Prepared Himself for Great Service, by a boy.
5. What Dr. Knapp Taught, quotations by class of pupils.
6. How the Demonstration Work was Organized and Conducted, by a leading citizen.
7. How Dr. Knapp's Work Helped this Community, this State and the South, by three boys.
8. How I Grew My Crop, by a Corn Club boy.
9. What I did with my Vegetables and Fruits, by three girls.
10. The Best Farm Crops for This Community and Why, by several pupils. How can these crop products be displayed today, school exhibit.
11. What can we do to Express Our Appreciation of Dr. Knapp's
5—6296—F & P—State Tenn Agri Bulle
Great Work? Collecting contributions, pledges.
12. Song: Bringing in the Sheaves, by all.

SCIENTIFIC FARMING IN LAWRENCE COUNTY.

That scientific farming pays a handsome dividend has been demonstrated by J. H. Stribbling's experience in Lawrence County. Mr. Stribbling is one of the leading citizens of that county, a farmer and a banker. He is intelligent and progressive, ever ready to avail himself of the opportunity to acquire information. When an expert from the Department of Agriculture visited Lawrence County with a view to interesting the people in better methods of tillage, in more scientific cultivation and in better seed selection he found Mr. Stribbling anxious to learn. This farmer consented to make a demonstration on twenty acres of ordinary Lawrence County land planted to corn.

The methods of planting, of land preparation and of cultivation were different from what a majority of the farmers of that section had followed for years. During the growing period of the crop Mr. Stribbling was repeatedly advised by other farmers, some of them older and more experienced, that he would have his trouble for nothing; that the corn was too thick and the cultivation entirely too shallow. He had been previously told that the land was not properly prepared. But Mr. Stribbling continued to accept the advice of experts;

to draw upon the information that demonstrations and results at experiment stations afforded and to follow the scientific methods. He was rewarded by having a yield of more than 100 bushels per acre upon his twenty acres. The total yield for the field was more than 2,000 bushels or over 400 barrels, worth \$3 per barrel, \$1,200, or more than the value of the land a few years ago.

When we consider that the average yield per acre of corn in the entire country is less than thirty bushels, that it is only about twenty-eight in the State of Tennessee and not more than thirty-five in the rich county of Maury we can better appreciate the value of scientific farming. Mr. Stribbling's demonstration of what twenty acres of Lawrence County land, properly handled, will do, will be worth thousands of dollars to that county. He has performed a service that few men in public life whose names are constantly before the people, have rendered. He has proven the possibilities of the soil.

The government and the State authorities are doing a great work for agriculture. J. M. Dean, under whose direction Mr. Stribbling's experiment was made and the others who have been associated with him in the work, are benefactors. During next month able demonstrators will be in Columbia for a week to tell the farmers of improved methods in the tillage and cultivation of the soil. It will pay the farmers to hear them and to heed their advice.—*Columbia Herald*.

GROWING POTATOES.

HOW TO PREPARE FOR A CROP NEXT YEAR THAT WILL PAY BIG.

The following is from the Chronicle, published at Crossville in Cumberland County, noted as a potato section:

The results of the efforts of some of the Potato Club boys will prove an "eye-opener" to some of our people. The reports are not all in yet and it is almost sure that some of the boys have not made the success they expected, but there are plenty of good reasons for their failure.

Two boys at Creston, Green Taylor and Garrison Morrow, have made good crops—183 and 152 bushels on a half acre. While this seems to some to be a big crop, it is not in fact a big crop for the soil of this mountain. Much more can be grown with proper preparation and careful cultivation. Following is a plan advised in the Southern Agriculturist that if followed would make the crops raised by the Creston boys look small. We give it for the benefit of those who want to grow a bouncer crop of potatoes next year.

HOW TO PREPARE THE LAND.

Disk the land well and harrow and roll until a good seed bed is made and sow wheat or rye at the rate of 1 1-2 bushels per acre. As soon as you can, spread the manure over the land at the rate of ten or twelve tons per acre. If practicable, use a manure spreader, as less of the grain crop will be smothered and a better job will be done. It will probably be advisable to sow with the grain two or three hundred pounds of acid phosphate per acre.

Next spring, about three or four weeks before time to plant the potatoes, run the roller over the grain, if it is as much as knee high, and then cut into pieces by double disking. Then plow deep, covering it as well as possible, and roll and harrow. After the land has stood about the time mentioned above, open the furrows and distribute the fertilizer in the drills and thoroughly mix it with the soil by running a one-horse cultivator or a double shovel along the furrow. A mixture consisting of 300 pounds of acid phosphate, 400 pounds of cotton seed meal and 50 pounds of muriate of potash will likely prove as effective as anything you could select without a test on your own land. If anything is reduced or cut down, it had better be the potash.

Unless the seed is very high plant good-sized pieces and make seed pieces as near cubical or spherical in shape as practicable. They should be of about the same thickness in each direction. Space twelve or fourteen inches in the row and have the rows three feet or somewhat less apart. Harrow two or three times before the potatoes come up if the weather will allow and cultivate thoroughly while the plants are young. Fairly deep plowing at the first cultivation is permissible, but after that it should be shallow and great care should be taken not to injure the vines and roots when the plants become large. Level culture, with enough dirt thrown to the row at the last cultivation to keep the tubers from sunburning, should be practiced.

The use of ashes or lime in growing potatoes is risky on account of the scab. You might increase the yield by using the ashes, but there is danger that scab would be caused unless they were used in a light application. If you use the amount of manure recommended, it will be safe to leave off the ashes entirely.

SPLENDID EXHIBITS OF CORN AT MURFREESBORO.

The Rutherford County Courthouse presented the appearance of the agricultural department of the State Fair during the exhibition of the products of the Boys' Corn Club and Girls' Tomato Club of this county Saturday.

There were thirty-two exhibits of corn and twenty-two boys competing. The prizes offered in the various contests were displayed in the corridors of the courthouse, and all day a large crowd was present viewing and complimenting the exhibits. Messrs. J. M. Dean and H. D. Tate, both of the Federal Department of Agriculture, acted as judges. Owing to the lack of time, awards in the girls' tomato contests were not made, but action postponed till November 16, when another meeting will be held.

Also awards in the boys' department were not concluded, but several decisions deferred till the same date. To Prof. J. D. Jacobs, County Superintendent of Education, is due practically all of the credit for the excellent showing made, which according to the judges, has not been surpassed by any county in the State.

The following awards were made:

Best ten ears, both first and second prizes by Batey Gresham, of Smyrna, registered Poland pig, valued at \$25, offered by T. E. Brown, and \$5 in gold by The Home Journal.

Best five stalks of corn with ears attached, W. L. Maxwell, of Rockvale, ton fertilizer by R. F. Overall; also second best, cultivator, by J. H. Read & Sons. Second best ten ears corn, won by Tillman Haynes, prize cultivator offered by Spain & Hudson.

Awards for the largest yield; most profitable acre; written report made by contestant, all to be made November 16. Prizes in these contests are, respectively, \$25, Rutherford County Fair Association; \$25, Berkshire gilt by Tucker, of Smyrna, and \$10 by Prof. Jacobs.—*Murfreesboro Home Journal*.

BOYS' CORN SHOW AND GIRLS' TOMATO EXHIBIT IN BENTON COUNTY.

Experiments that mean much to our farmers have been carried out in Benton County the past summer. Some of the beneficial results may be seen here tomorrow in the Corn Show and the Girls' Tomato exhibits.

These exhibits will be made for the purpose of determining who has made the greatest success in his line. The winner of the prizes will have reasons to feel proud. Many farmers may see the results produced by amateur farmers. They will also here detail the experiences of these young farmers. Each one will have a written booklet giving his trials and triumphs.

If the older farmers of this country will set to work following rules observed by these young farmers they will have cause to be proud of the day corn clubs were organized in Benton County. We

hear reports already from boys who have doubled and some have tripled the output usually had by their fathers from the same character of soils.

The girls are developing the habit of practical growing and canning of tomatoes that will develop into a wonderful source of revenue to the farm and home if those who should will profit by experiences of the girls that have acquitted themselves so well this year.

There should be a good turn out here tomorrow. We believe there will be.—*Camden Citizen*.

OCTOBER WEATHER SUMMARY.

According to the monthly meteorological summary issued by Roscoe Nunn, Director of the local Weather Bureau, there were for the month of October 16 clear days, 10 partly cloudy days, 5 cloudy days, and 5 days with .01 inches or more precipitation and 3 days with .25 inches or more precipitation. The highest temperature for the month was 88 degrees on the 9th, and the lowest was 37 degrees on the 28th, and the least daily range was 8 degrees on the 21st. The normal for October is 60.3 degrees, and the highest for October for the last forty-two years is 92 degrees, while the lowest for that month for the last forty-two years is 27 degrees. The average daily excess for October, as compared with the normal, was 1.9 degrees, and the accumulated deficiency since January 1 was 521. The average daily deficiency since January 1 was 1.7.

The total amount of precipitation for the month of October was 2.45 inches. The greatest amount in one hour was .78 inches on the 18-19th, and the greatest in twenty-four hours was 1.16 inches, also on the 18-19th. The normal precipitation for the month of October is 2.48 inches, and the deficiency for the past month, as compared with the normal, was .03. The accumulated excess since January 1 was 6.92 inches.

The prevailing direction of the wind for the past month was northeast, the total movement being 5,532 miles. The average velocity of the wind was 7.4 miles, and the highest velocity for five minutes was 34 miles, from the south, on the 31st.

Dense fogs were reported on the 1st and 2d, light frosts on the 1st, 2d, 3d, 27th, 28th; heavy frosts on the 24th and 25th, and no killing frosts. A thunderstorm was reported on the 31st.

A glossy or shiny appearing egg in most markets is looked upon as unfresh stock. To clean eggs rightly, rub stained portion with borax upon a soft rag.

WEST TENNESSEE FARMERS' INSTITUTE.

The West Tennessee Farmers' Institute was held at Jackson, Tenn., October 1, 2 and 3, and was attended by about 2,500 farmers from every county in that division of the State.

The following program, with the exception of a few changes, was carried out:

FIRST DAY.**TUESDAY, OCTOBER 1.**

10 a.m.—Called to order by President.....Col. J. H. McDowell, Bunton
InvocationRev. H. B. Johnson, Jackson
Address of WelcomeDr. John T. Crews, Jackson
ResponseCapt. T. F. Peck, Commissioner of Agriculture
Soils and Crops.....Prof. H. A. Morgan, University of Tennessee
Prevention of Disease in Farm Animals.....
.....Dr. George R. White, State Live Stock Inspector
Announcement of Committees by President.

Afternoon Session—1:30 P.M.

Farm Demonstration Work.....H. D. Tate, U. S. Demonstration Agent
Silos and Ensilage.....J. N. Meroney, Darke Mills

Evening Session.

Health and Sanitation.....Dr. Olin West, State Board of Health

SECOND DAY.**WEDNESDAY, OCTOBER 2.**

10 a.m.—Invocation.....Rev. H. W. Virgin
Source and Use of Commercial Fertilizers.....
.....R. T. DeBerry, Assistant Commissioner
Tennessee MulesJohn L. Jones

Afternoon Session—1:30 P.M.

Domestic ScienceMiss Lucy Buttorff, Nashville
Tennessee State FairJ. W. Russwurm, Nashville
Present Status of Tick Eradication in Tennessee.....Dr. J. A. Kiernan

Evening Session.

Agricultural Education.....Prof. M. W. Robinson, Assistant Supt. Public Ins.
Girls' Tomato Clubs.....Miss Virginia Moore, State Organizer for Tennessee

THIRD DAY.**THURSDAY, OCTOBER 3.**

10 a.m.—Invocation
.....Rev. Robt. Lee Johnson, Pastor First Presbyterian Church
Circulating LibrariesMrs. Pearl Kelley
Bee CultureDr. J. S. Ward
Feed and Seed InspectionA. L. Garrison
InsectsProf. G. M. Bently

Some of these papers and addresses will be published in future numbers of Tennessee Agriculture. The Secretary of the Institute was requested to send minutes of the proceedings, and copies of addresses and papers, but failed to do so.

The following officers were elected for the ensuing year:

R. T. DeBerry, Gibson County, President; E. H. Dowdy, Benton County, First Vice President; Dennis Brasfield, Weakley County, Second Vice President; J. D. Johnson, Madison County, Secretary.

TENNESSEE'S LIVE STOCK.

Statistics for live stock products for Tennessee are presented in a bulletin soon to be issued by Director Durand, of the Bureau of the Census, Department of Commerce and Labor. It was prepared by John Lee Coulter, expert special agent for agriculture.

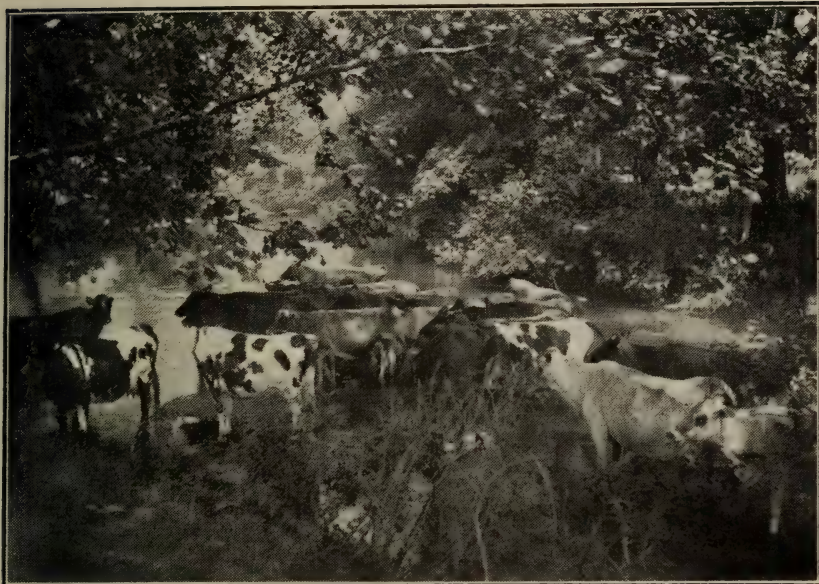
The returns for live stock products obtained at the census of 1910, like those for other products, relate to the activities of the calendar year 1909. It is impossible to give a total representing the annual production of live stock products for the reason that the total value of products from the business of raising domestic animals for use, sale, or slaughter cannot be estimated from the census returns.

The number of farms reporting dairy cows on April 15, 1910, was 205,360, but only 183,925 reported dairy products in 1909. That there should be this difference is not surprising. Doubtless some farmers who had dairy cows in 1910 had none in 1909, while other farmers neglected to give information for the preceding year, or were unable to do so, perhaps because the farm was then in other hands. Dairy products in general are somewhat less accurately reported than the principal crops. This is particularly the case as regards the quantity of milk produced. The number of farms which have made any report of milk produced during 1909 was 183,807, slightly less than those reporting dairy products, and the number of dairy cows on such farms on April 15, 1910, was 359,000. The amount of milk reported was 117,102,000 gallons; assuming that there were the same number of cows in 1909 as in 1910, this would represent an average of 326 gallons per cow. In considering this average, however, it should be borne in mind that the quantity of milk reported is probably deficient and that the distinction between dairy and other cows is not always observed in the census returns.

By reason of the incompleteness of the returns for milk produced, the Census Bureau made no attempt to determine the total value of dairy products for 1909. For convenience a partial total has been presented comprising the reported value of milk, cream and butter fat sold and the reported value of butter and cheese made, whether for home consumption or for sale. The total thus obtained for 1909 is \$8,715,000, which may be defined as the total value of dairy products, exclusive of milk and cream on the farm producing.

Only a small porportion of the milk produced by Tennessee farmers in 1909 was sold as such. The butter made on farms in 1909 was valued at \$7,303,600.

Comparisons are made between 1909 and 1899, for but few of the census items relating to dairy products, for the reason that in 1899



Dairy Herd of Mr. George J. Everston in Wilson County.
(Cut loaned by Mr. A. J. Casey, Lebanon.)

estimates were made for farms with incomplete reports which was done at the present census. The figures for milk produced and milk sold are particularly affected, but those for butter and cheese are approximately comparable. There was a material increase between 1899 and 1909 in the amount of butter made, and relative increase in the production of cheese.

The total number of sheep of shearing age in Tennessee on April 15, 1910, was 470,000, representing an increase of 52.8 per cent as compared with the number of June 1, 1900, 308,000. The approximate production of wool during 1900 was 496,000 fleeces, weighing 1,854,000 pounds and valued at \$466,000. Of these totals about one-fifth represents estimates. The number of fleeces produced in 1909 was 43.1 per cent greater than in 1899. The average weight per fleece in 1909 was 3.7 pounds as compared with four pounds in 1899, and the average value per pound was twenty-five cents, as compared with nineteen cents in 1899.

Although 4,859 farmers reported 43,360 goats and kids on their farms, April 15, 1910, only 115 reported the production of goat hair or mohair during 1909. These farmers reported 1,342 fleeces, weighing 3,428 pounds and valued at \$1,053. Although the production is still unimportant, some increase is shown over that in 1899.

The total number of fowls on Tennessee farms on April, 15, 1910,

was 9,056,000. Of the 222,711 farms reporting fowls, 23,003 did not report any eggs produced in 1909, and 24,141 did not report any poultry raised in 1909. The production of eggs actually reported for the year 1909 was 39,352,000 dozens, valued at \$6,794,000. According to the twelfth census reports the production of eggs in 1899 was 31,808,000 dozens, the value being \$3,115,000. The latter figures, however, are somewhat in excess of the actual returns at that census, because they include estimates made to cover those cases where the schedules reported fowls on hand without reporting the production of eggs. In order to make the returns for 1909 comparable with those published for 1899, similar estimates have been made, the method of estimate and the justification therefor being substantially the same as in the case of wool. The total production of eggs in 1909, including these estimates, was 42,043,000 dozens, valued at \$7,258,000. The total production of poultry in 1909, including estimates made on the same basis as for eggs was 17,415,000 fowls, valued at \$5,774,000.

Although 4,859 farmers reported 43,360 goats and kids on their April 15, 1910, 10,123 of these farms, with 30,164 colonies on hand April 15, 1910, made no report of honey and wax produced in 1909. The actual returns show the production of 1,468,000 pounds of honey, valued at \$176,000 and 28,864 pounds of wax, valued at \$7,271; the true totals are doubtless somewhat above these figures.

The total value of domestic animals sold during 1909 was \$37,637,000, and that of animals slaughtered on farm \$12,210,000, making an aggregate of \$49,847,000. This total, however, involves considerable duplication, resulting from the resale or slaughter of animals which had been purchased by the farmers during the same year.

The value of the cattle, including calves, sold during 1909 represented about one-third of the total value of animals sold, and the value of mules and of swine sold constituted most of the remainder.

The census of 1900 called for the receipts from the sale of domestic animals raised on the farms reporting and the total value of those slaughtered during the year 1899, which amounted, respectively, to \$11,121,000 and \$8,350,000.

The item of sales is not closely comparable with that of 1909 when the inquiry covered all sales whether of animals raised on the farms reporting or elsewhere. It is believed, however, that in many cases the returns for 1899 also included receipts from sales of animals not actually raised on the farms reporting.

GREAT CORN-GROWING CONTEST.

In an article in the current issue of the Farm and Fireside appears an interesting account of a corn-growing contest that is being held in North Carolina, in which State, by the way, the corn crop has doubled in the last three years. Last year's champion is a young man named Parker, who got a yield of 235 bushels per acre. James F. Botts is another expert. When it is considered that thirty bushels per acre is a fair yield, the following extract from the article is significant:

"Thousands of North Carolina men and boys are competitors in this year's contest. Botts is again in the race. Last year on forty acres he got an average of 138 bushels. He intended to dynamite his land last November, but did not do so until the middle of March. He used eight-ounce charges, twenty-five per cent strength, planted forty-two inches deep and twelve feet apart. This thoroughly pulverized the ground to a depth of four feet. His corn, of his one type, Botts' Prolific, was planted April 9. A photograph made of this test acre exactly sixty days later shows remarkable growth. On the sixth day of July this corn was ten feet high, and was silking and tasseling, giving wonderful promise of a crop. It is planted in rows four and one-half feet apart, and from eight to ten inches in the drill, whereas in 1909 the rows were only forty-two inches apart. The number of stalks was then estimated at 19,000; this year it is about 13,000. It remains to be seen how the yields will compare, as this season the stalks are larger and better eared than they were three years ago. For three weeks up to July 6 the weather was quite dry, but this corn, then planted, did not show any lack of moisture and made a far finer showing than thirty acres in a field adjoining.

"The interest in this test experiment is great, and farmers, both men and boys, are going to see the corn from far and near. State officials and officers of the Agricultural Department are this year to measure the crop and verify the acre on which it is grown."

PHOSPHATE DEVELOPMENT IN HICKMAN COUNTY.

The phosphate interests of this county have taken on new life in the last week. Eastern capitalists have been here looking over the field and report that they found the rock even better than they had expected. More than \$300,000 of options have been secured for a period of six months and after they expire if they should be renewed the capitalists agree to pay ten per cent of the amount of the option. It now seems sure that something will be doing in a few months along this line. Large deposits of brown rock have been discovered

along Duck River and its tributaries, besides abundance of the blue rock in nearly all parts of the county.

Hickman County has long been noted for its rich deposits of phosphate and it is destined to become one of the chief centers of this industry. There is enough rock in this county to keep numerous mining plants busy for years.—*Hickman County Citizen*.

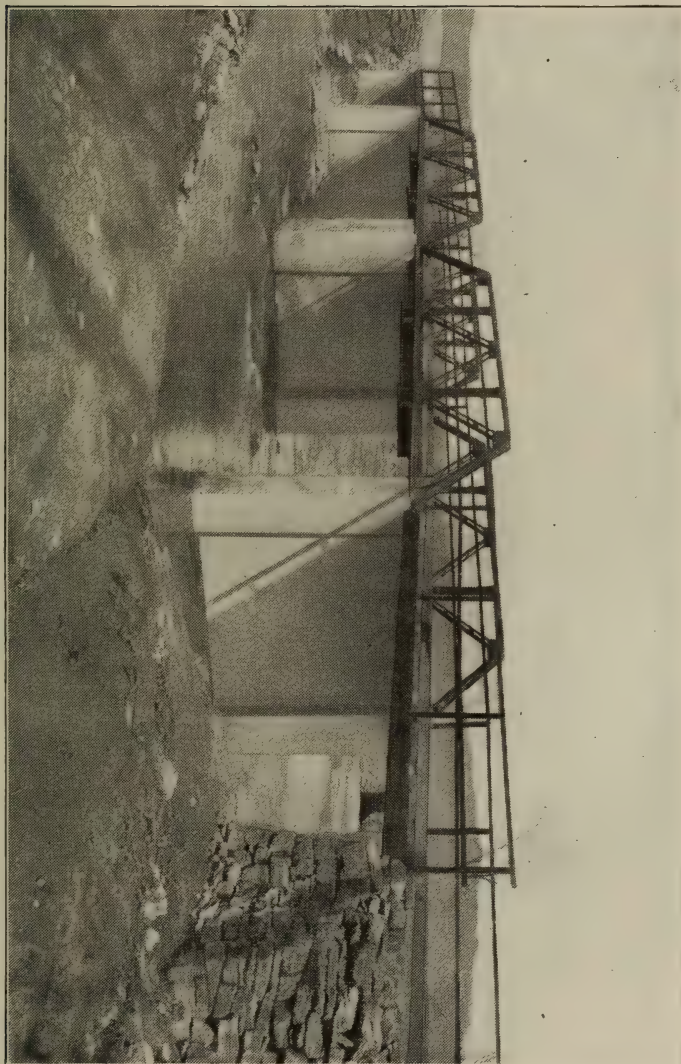
“PINK EYE” IN CATTLE.

By Dr. George R. White, State Live Stock Inspector.

Since “Pink Eye” in cattle has appeared in certain portions of Tennessee to the extent of becoming what may properly be termed “epidemic form,” I consider it of sufficient importance to contribute this short descriptive article for publication in the daily and weekly papers of the State for the benefit of the cattle raisers in general and those who have “pink-eye” infected cattle in particular. Pink-eye is a local infectious disease which attacks the whole or part of the eyeball. It is technically known and described as infectious Ulcerative Keratitis. This disease has been observed in the cattle herds of Tennessee for more than thirty years. The monetary loss which results directly and indirectly from its ravages in this State amounts to many thousands of dollars annually. It is a “germ disease” and is highly contagious. The period of incubation, which means the time from exposure to the development of first symptoms, varies from five to nine days. When one animal in a herd develops pink-eye, many other animals in the same herd invariably become affected in a short time. I have frequently observed whole car-loads of cattle affected with this disease in the local stock yards at Nashville.

Pink-eye in cattle and pink-eye in the horse are two separate and distinct diseases. Pink-eye in the horse is not transmissible to cattle, neither is pink-eye in cattle transmissible to the horse; however, pink-eye in cattle is readily transmitted to sheep and goats, hence the presence of either of the latter species of animals should always be taken into consideration whenever pink-eye appears among the cattle on a farm.

Symptoms.—At first the eyelids are slightly swollen and the animal closes the eye in the presence of light—sunlight is particularly painful. About this time there is weeping of tears from the eye (lacrymation) on account of the intense inflammation which is rapidly developing. This discharge is at first clear and watery, but soon becomes purulent and later muco-purulent. The patients suffer acute pain, hence are restless and frequently change their position and location. Their eyelids become rigidly swollen. Opacity of the cornea



Spring Creek Bridge, near Greenwood in Wilson County. This County Has Fine Roads.
(Cut loaned by Nashville Bridge Co.)

becomes apparent. This corneal opacity causes the whole eyeball to appear whitish or discolored. Almost invariably one or more ulcers develop on the cornea, at which time the discharge is freely escaping, consisting of pus and blood. These ulcers frequently perforate the three coats of the cornea and empty the eyeball of its contents. Of course, when these vital contents of the eyeball itself escape through the opening resulting from an ulcer or any other cause, the result is total blindness in the affected eye or eyes. If the ulcers do not penetrate or perforate the cornea, blindness seldom results from the effects of this disease. It matters not how opaque the cornea may become the opacity will usually disappear under proper treatment in a reasonable time unless perforation occurs. The affected animals separate themselves from the remaining ones in the herd and stand alone for hours in distant parts of the pastures. They refuse food or partake of it sparingly and the flow of milk is rapidly diminished. The coat becomes starry and they emaciate rapidly. Both eyes are usually involved.

Prevention.—Remove all healthy cattle from the pastures and leave the diseased ones on the infected premises. This precaution should be taken early in the outbreak, otherwise all of the exposed cattle may have already become infected with the virus of the disease. Examine the well cattle daily for evidences of the first symptoms, which are closed eye, slightly swollen lid and “weeping.” If any one or all of these symptoms are present, it shows that the disease is developing in which event this animal should at once be placed back with the diseased ones. By keeping the exposed ones under close observation for from five to nine days all the infected cattle can be isolated from the healthy ones and the spread of the disease stopped.

Treatment.—Place animals in a darkened stall. Never allow them to remain for any considerable length of time in the bright sunlight, as light has a tendency to increase the pain incident to this disease as well as having otherwise detrimental effect upon the satisfactory and hasty recovery of such cases. Bathe eyes morning and night with boracic acid solution in the strength of one teaspoonful powdered boracic acid to one quart of warm water. After bathing apply a small amount of Melford's Conjunctivitis Ointment No. 18. The above mentioned ointment can be procured from any drug store in one-fourth ounce collapsible tubes, in which form its application is simple and convenient. Before attempting to treat these “Pink Eye” cases it is necessary to confine the animal by tying head up with halter or otherwise, as without some method of restraint the treatment cannot be applied in a satisfactory manner.

SUMMARY OF OCTOBER CROP REPORT.

T. F. Peck, Commissioner, Department of Agriculture, Nashville,
Tenn., November 1, 1912.

Reports from more than 200 crop correspondents in eighty-eight counties indicate that the crop yields this year will not be so good as last year, although some better than farmers had reason to expect earlier in the crop year.

Owing to dry weather during September and October, fall sowing has been delayed, and the reports as to the acreage in wheat, oats, and rye will be subject to correction in next month's report.

Fine weather during October was utilized by farmers in the picking of cotton, and the staple will show a better yield than was expected.

The corn crop is reported good in some sections of the State, and on the whole will show a fairly good yield, as compared with average years.

Rain in some sections of the State about the 18th helped pastures, and grazing has been good. Young clover is reported in good condition. A good crop of pea hay has been saved.

In the eastern section of the State, the apple yield is reported excellent, and for the best fruit there is a good demand at good prices.

Live stock, with the exception of hogs, is reported in good condition in the State. Hog cholera is prevalent in many localities, and some sections have suffered severe losses on account of this scourge.

No crop report was issued last October, and therefore no comparison is made with that month of last year. Taking 100 as a normal crop, the following figures are compiled from the reports of correspondents:

	Per Cent.
Wheat, acreage sown	77
Winter oats, acreage sown	76
Rye, acreage sown	78
Corn, yield	79
Cotton, yield	71
Millet, seed threshed	72
Stock peas, seed threshed	68
Sweet potatoes, yield	77
Late Irish potatoes, yield	75
Tobacco, yield	83
Sorghum, yield	82
Broom corn, yield	80
Peanuts, yield	75
Young clover, condition	84
Grasses, condition	85
Alfalfa, condition	82
Pea hay, saved	87
Apples, yield	75
Live stock, condition	91

OCTOBER CROP REPORT FOR 1912—T. F. PECK, Commissioner of Agriculture

DISTRICT	COUNTY	Wheat—acreage sown, per cent.	Winter Oats—acreage sown, per cent.	Rye—acreage sown, per cent.	Corn—yield, per cent.	Cotton—yield, per cent.	Millet Seed— threshed, per cent.	Stock Peas Seed— threshed, per cent.	Sweet Potatoes— yield, per cent.	Late Irish Potatoes— yield, per cent.	Tobacco—yield, per cent.	Sorghum—yield, per cent.	Broom Corn—yield, per cent.	Peanuts—yield, per cent.	Young Clover—con- dition, per cent.	Grasses—condition, per cent.	Alfalfa—condition, per cent.	Pea Hay—saved, per cent.	Apples—yield, per cent.	Live Stock—con- dition, per cent.
A Alluvial Plain of the Mississippi River and Plateau Slope of West Tennessee.	Lake	...	...	95	78	65	...	...	75	85	...	...	...	...	...	85	90	95	50	90
	Obion	60	50	100	60	75	...	50	60	80	100	90	100	100	100	100	100	100	100	100
	Dyer	80	...	75	68	55	...	...	80	78	...	95	70	50	90	75	...	40	25	80
	Lauderdale	78	75	...	76	69	75	64	81	78	...	88	100	80	87	93	90	92	67	94
	Tipton	100	98	90	67	60	...	78	80	63	...	85	...	...	85	93	...	92	90	92
B Brown Loam Table- lands, Middle Counties of West Tennessee.	Shelby	100	100	100	75	63	...	70	95	70	...	75	...	...	80	88	...	93	93	90
	Weakley	80	50	85	75	70	...	88	78	58	80	77	88	75	67	68	...	95	53	83
	Gibson	...	60	70	70	65	...	40	80	75	...	60	75	75	75	50	70	75	80	82
	Crockett	80	60	...	75	60	80	70	...	70	...	60	...	...	80	50	...	...	...	82
	Madison	100	70	98	83	55	80	90	95	70	100	70	...	100	95	90	90	90	...	95
C Summit Region of Watershed, West Ten- nessee.	Haywood	80	75	80	62	64	...	38	81	68	...	82	100	100	80	80	...	93	55	89
	Hardeman	80	80	78	85	78	65	...	90	65	...	90	100	90	50	70	100	100	68	100
	Fayette	62	50	...	62	55	...	43	80	50	...	60	...	...	...	35	...	65	63	85
	Henry	80	...	85	85	58	80	85	90	90	70	85	95	...	73	88	...	85	70	83
	Carroll	100	100	100	88	65	...	80	100	100	75	100	50	75	85	...	...	100	68	90
D Valley of Tennessee River, West and Mid- dle Tennessee.	Henderson	...	83	68	70	60	...	...	78	75	60	75	...	40	63	40	...	70	68	80
	Chester	...	80	90	75	78	...	35	78	40	...	90	75	...	...	95	...	90	73	83
	McNairy	...	75	90	57	52	...	55	63	70	...	53	50	50	78	80	80	83	83	88
	Stewart	95	50	80	80	...	...	100	63	80	77	77	...	...	70	80	...	90	90	82
	Benton	50	60	100	70	68	...	...	93	50	100	88	65	...	60	80	...	70	90	92
	Houston	80	98	80	75	...	...	65	98	50	75	80	...	85	80	83	90	78	100	80
	Humphreys	...	...	78	80	...	50	68	50	65	60	73	...	70	83	75	60	83	55	81
	Decatur	50	...	...	73	70	...	...	80	85	...	68	70	80	73	72	60	80	77	88
	Perry	...	100	65	...	...	...	83	70	...	...	53	...	75	90	90	...	82	55	83
	Hardin	85	...	...	68	53	...	40	78	80	...	50	...	...	12	...	...	83	50	83

E Highland Rim of Middle Tennessee, Western Subdivision.	Montgomery	78	25	25	80	.....	75	60	60	80	68	.....	60	65	68	73	90	90
	Robertson	90	63	60	78	.....	.....	75	100	75	100	.....	.....	90	95	100	58	95
	Cheatham	50	90	50	93	.....	50	70	.....	78	80	.....	.....	95	90	100	75	35
	Dickson	90	90	95	95	.....	75	100	.....	88	90	100	.....	100	100	98	100	100
	Hickman	73	63	70	85	.....	70	50	65	63	85	68	50	75	80	65	93	85
	Lewis	85	85	80	88	.....	90	.....	60	70	88	71	.....	78	70	76	38	95
	Wayne	.....	.....	.....	75	.....	.....	50	25	.....	.....	50	.....	.....	.....	.....	100	100
	Lawrence	100	100	100	90	80	.....	50	50	.....	75	.....	75	100	100	100	40	100
	Macon	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Clay	75	.....	75	80	.....	.....	80	60	75	.....	50	.....	90	90	.....	90	100
F Highland Rim of Middle Tennessee, Eastern Subdivision.	Pickett	80	50	50	75	.....	25	50	75	75	75	.....	.....	80	80	70	80	80
	Overton	81	91	93	81	.....	80	79	85	75	90	89	.....	91	94	83	98	88
	Jackson	75	.....	90	75	.....	80	65	73	100	77	73	73	95	90	70	100	95
	Putnam	88	88	100	88	.....	100	88	83	83	100	95	.....	78	95	100	98	93
	DeKalb	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	White	83	90	85	73	.....	100	83	85	90	100	98	90	85	83	95	83	93
	Warren	100	90	.....	75	.....	50	50	90	80	95	95	.....	80	80	90	80	80
	Coffee	93	86	84	60	.....	95	68	83	71	55	91	88	100	85	84	93	31
	Franklin	85	87	.....	80	85	100	.....	50	80	80	90	.....	80	95	93	100	92
	Sumner	86	67	98	81	.....	50	58	79	74	83	78	50	60	88	86	78	88
G Central Basin.	Trousdale	.....	.....	.....	.....	.....	80	88	53	50	100	93	70	50	98	88	80	98
	Smith	85	75	90	70	.....	.....	.....	70	60	.....	90	80	40	60	30	60	80
	Davidson	60	70	60	78	.....	.....	.....	78	73	75	75	.....	98	85	55	63	100
	Wilson	75	.....	85	83	.....	90	40	80	65	70	82	100	45	80	95	52	87
	Williamson	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Rutherford	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Cannon	70	80	60	75	.....	75	40	60	73	.....	73	60	83	80	95	83	85
	Mauzy	81	100	91	89	.....	85	55	64	71	.....	89	85	91	86	90	76	91
	Marshall	78	80	75	78	.....	85	55	75	80	.....	80	65	98	80	95	63	88
	Bedford	65	75	69	74	85	.....	75	76	63	.....	58	100	91	83	60	91	69
H Cumberland Tableland.	Giles	73	60	70	88	.....	70	80	83	65	75	85	90	73	70	65	58	90
	Lincoln	75	.....	80	70	.....	60	60	90	95	.....	60	100	80	80	80	70	80
	Moore	85	100	98	80	.....	95	82	90	95	.....	100	100	100	100	95	63	100
	Scott	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Fentress	75	.....	.....	80	.....	90	80	80	.....	80	.....	.....	.....	.....	.....	.....	80
	Morgan	68	70	65	65	.....	80	90	90	90	75	75	60	69	85	80	100	90
	Cumberland	.....	.....	100	100	.....	100	100	100	100	75	85	75	100	100	100	100	80
	Van Buren	60	63	.....	79	.....	50	87	87	78	85	80	75	50	82	73	95	100
	Grundy	100	50	100	70	.....	100	40	40	100	.....	100	.....	100	100	100	100	100

OCTOBER CROP REPORT FOR 1912—T. F. PECK, Commissioner of Agriculture

DISTRICT	COUNTY	Wheat—acreage sown, per cent.	Winter Oats—acreage sown, per cent.	Rye—acreage sown, per cent.	Corn—yield, per cent.	Cotton—yield, per cent.	Millet Seed—threshed, per cent.	Stock Peas Seed—threshed, per cent.	Sweet Potatoes—yield, per cent.	Late Irish Potatoes—yield, per cent.	Tobacco—yield, per cent.	Sorghum—yield, per cent.	Broom Corn—yield, per cent.	Peanuts—yield, per cent.	Young Clover—condition, per cent.	Grasses—condition, per cent.	Alfalfa—condition, per cent.	Pea Hay—saved, per cent.	Apples—yield, per cent.	Live Stock—condition, per cent.
J Cumberland land and Valley of East Tennessee.	Claborn	75	100	75	80	...	100	50	85	70	...	...	...	...	75	80	...	80	50	80
	Campbell	79	49	62	86	...	100	100	76	85	...	...	90	95	93	86	...	88	83	91
	Anderson	79	70	57	74	...	...	58	66	67	90	...	95	85	87	87	...	83	89	91
	Ithaca	100	100	88	63	...	...	...	60	95	...	...	60	70	70	90	...	100	60	95
	of Bledsoe	63	60	70	83	90	...	40	85	90	70	80	60	70	80	90	...	90	58	100
	Sequatchie	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Marion	75	63	75	70	...	75	70	83	50	60	80	70	50	70	70	85	...	75	98
	Hamilton	50	60	75	60	...	...	...	75	...	...	...	...	...	75	80	...	90	...	80
	Sullivan	90	90	...	80	...	95	...	80	75	...	...	96	...	90	90	...	...	100	100
	Hawkins	79	80	75	85	...	80	...	80	85	95	100	95	100	95	95	...	98	78	97
K East Tennessee Valley.	Hancock	88	80	95	93	...	80	88	90	95	95	...	95	...	95	95	...	88	88	95
	Washington	80	95	95	100	...	25	65	75	80	100	...	60	100	100	90	80	80	100	100
	Hambden	78	73	85	78	...	73	65	73	88	91	...	60	100	88	92	95	92	90	91
	Granger	80	88	85	70	...	30	...	90	90	...	...	...	...	93	95	...	98	90	100
	Union	90	85	78	90	...	50	45	78	90	95	...	100	100	93	97	100	95	100	85
	Jefferson	92	85	78	90	...	50	45	78	90	95	...	...	...	85	90	...	95	88	33
	Knox	90	80	75	95	...	...	...	75	80	...	...	...	...	83	92	95	65	65	95
	Roane	90	95	50	77	...	...	...	60	80	100	...	...	...	83	92	95	95	75	90
	Loudon	35	50	...	75	...	80	75	100	50	100	...	...	...	...	75	...	100	40	100
	McMinn	60	74	60	90	80	...	45	65	83	...	93	75	50	75	83	...	73	83	90
L Valley of East Ten- nessee and Unaka Re- gion.	Meigs	60	58	55	85	85	...	85	90	83	85	90	75	...	80	83	...	85	68	85
	Bradley	60	55	70	85	85	100	80	70	68	...	80	90	50	78	80	100	95	50	98
	James	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Johnson	88	95	90	84	...	75	80	81	87	...	95	60	...	97	93	75	100	90	100
	Carters	70	90	80	80	...	90	40	80	35	...	95	90	...	95	95	85	95	100	95
	Union	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Greene	62	78	80	97	...	80	50	85	70	80	93	...	...	...	85	...	95	92	90
	Cocke	42	58	63	78	...	90	72	85	80	95	82	90	...	92	93	100	83	80	93
	Sevier	63	88	78	70	80	85	72	87	72	92	92	88	88	94	93	90	93	90	91
	Blount	40	80	82	77	...	...	83	83	75	85	72	83	80	80	92	90	80	95	87
State Average	Monroe	50	50	...	75	...	...	60	75	70	90	85	80	70	85	60	...	85	50	90
	Polk	53	68	70	80	72	...	63	82	80	...	85	50	60	...	90	...	87	45	92
State Average		77	76	78	79	71	72	68	77	75	83	82	80	75	84	85	82	87	75	91

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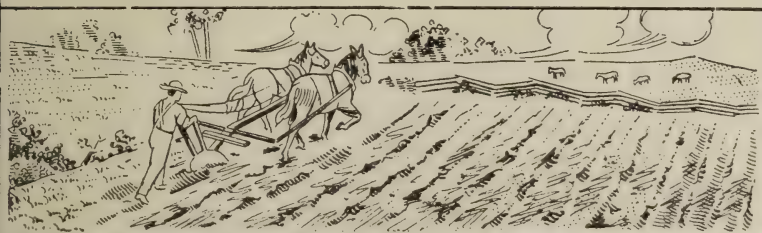
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IN THIS ISSUE:

- Middle Tennessee Farmers' Institute.
- State and County Fairs.
- Tick Eradication Work in Tennessee.
- Source and Use of Fertilizers.
- Silos and Silage.
- Farm Products of Tennessee.
- Benton County Corn and Tomato Clubs.
- November Crop Report.



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MIDDLE TENNESSEE FARMERS' INSTITUTE.

The Middle Tennessee Farmers' Institute will meet in annual convention in the Capitol at Nashville on December 3 for a three-days' session. The railroads of Middle Tennessee are, as heretofore, co-operating with the Department of Agriculture, and the coming sessions of the Institute promise to be most interesting and well attended. Sam N. Warren, of Spring Hill, is the President of the Institute, and Robert Gallagher, of Shelbyville, is the Secretary.

The Department of Agriculture has issued instructions to the various counties sending delegates and receiving transportation to see that *bona fide* farmers are selected. It is the desire of the Department to entirely eliminate the practice of issuing these certificates to politicians and others having no interest in agriculture or the proceedings of the convention. Last year's sessions were attended by about 2,500 of the best farmers in Middle Tennessee, and the hall was at all times filled by men who were there to receive instruction in the various branches of agriculture and to exchange ideas to their mutual benefit.

The following program has been announced for the three-days' meeting:

FIRST DAY—TUESDAY, DECEMBER 3.**MORNING SESSION, 10:00 A. M.**

Call to order by the President.....Sam N. Warren, Spring Hill, Tenn.
 Invocation.
 Address of Welcome.....Gov. Ben W. Hooper
 Response.....J. N. Meroney, Darks Mill, Tenn.
 Annual AddressBy the President
 Address.....H. D. Tate, Farm Demonstration Agent
 Address.....T. F. Peck, Commissioner of Agriculture
 AddressMrs. J. Taylor Stratton, President Home-Makers' Section

AFTERNOON SESSION, 1:30 P. M.**Boys' Corn Club Section.**

Boys' Corn Club Work.....O. B. Martin, U. S. Dept. of Agriculture
 Boys' Corn Club Work in Tennessee.....M. L. Hardin, Camden, Tenn.
 Boys' Corn Club Work in Middle Tennessee.....
B. H. Gaultney, Pulaski, Tenn.
 Tobacco Industry in TennesseeHervey Whitfield, Clarksville
 Essay by Alton C. Greer, Pikeville, Tenn., winner prize essay, Boys' Farm
 Encampment, Tennessee State Fair.
 Organization of Boys' Department, Middle Tennessee Farmers' Institute.

NIGHT SESSION, 8:00 P. M.

The Cultivation of CornH. A. Morgan
 Food and Drug Inspection.....Dr. L. P. Brown
 Knapp Memorial DayThos. A. Early

SECOND DAY—WEDNESDAY, DECEMBER 4.

MORNING SESSION, 9:30 A. M.

Invocation.

- Sheep Industry in Tennessee.....Prof. Ewing Hite, Gallatin, Tenn.
 The Need of County Farmers' Institutes.....H. K. Bryson, Fayetteville, Tenn.
 Orchard and Fruit Growing.....Percy C. Brown, Spring Hill, Tenn.
 Preventable Losses on the Farm
Prof. G. M. Bentley, State Entomologist, Knoxville
 Small Fruit Growing for Market in Tennessee.....
Walter McKinney, Antioch, Tenn.
 AddressMrs. Myra A. Tandy, Leoma, Tenn.

AFTERNOON SESSION, 1:30 P. M.

- Address by Col. Robert Gates, Land and Industrial Agent, L. & N. Railway.
 Poultry Industry in Tennessee.....J. A. Murkin, Nashville, Tenn.
 Federal Cooperation in Live Stock Sanitary Control Work.....
J. A. Kiernan, U. S. Veterinary Inspector, Nashville, Tenn.
 Feed and Seed Control Laws in Tennessee.....
A. L. Garrison, Chief Feed and Seed Inspector
 The Swine Industry in TennesseeJ. D. B. DeBow, Nashville, Tenn.
 Appointment of Committees.
 Nashville as a Market for Farm Products.....
Discussion by Farmers and Members of Nashville Board of Trade

NIGHT SESSION, 8:00 P. M.

- Health and Sanitation on the Farm (Stereopticon Views).....
Dr. Olin West, Assistant Secretary for Eradication of Hookworm
 Cost of Production of Farm Crops (Stereopticon Views).....
F. W. Gist, Special Agent, U. S. Department of Agriculture

THIRD DAY, THURSDAY, DECEMBER 5.

MORNING SESSION, 9:30 A. M.

Invocation.

- Hog Cholera, Bovine Tuberculosis and Texas Fever—A \$5,000,000.00
 Proposition.....Geo. R. White, State Live Stock Inspector
 Industrial Education in Schools.....
Prof. J. W. Brister, State Superintendent Public Instruction
 The Importance of Saving Our Soils.....Dr. A. H. Pardue, State Geologist
 Address, "Practical Ideals".....Mrs. Rutledge Smith, Cookeville
 Report of Committees.
 Election of Officers.

HOME-MAKERS' ASSOCIATION.

At last year's session of the Middle Tennessee Institute, which was attended by many of the wives and daughters of the farmers, the Home-Makers' Association was organized, with the following officers:

Mrs. J. Taylor Stratton, Madison, President; Mrs. Cora Boone Mason, Prospect, Vice-President; Mrs. Myra A. Tandy, Lawrence-

burg, Secretary. The following Executive Board was selected: Mrs. John Walker, Wartrace; Mrs. John Thompson and Mrs. T. G. Settle, Nashville.

The meetings this year will be held in the Senate chamber at the Capitol on the same days as the Farmers' Institute. The following program has been arranged:

FIRST DAY—AFTERNOON.

Address.....Gov. B. W. Hooper
President's Address.....Mrs. J. Taylor Stratton
Cooperation Between the City Woman and the Country Woman.....
.....Mrs. A. B. Cooke
The Woman on the Farm.....Mrs. Charles O. Browder
The Decoration of the Home.....Mrs. J. C. Bradford, Nashville
Poultry Raising as an Occupation for Women.....Mrs. Reginald Stonestreet
Discussion.

SECOND DAY—AFTERNOON.

Address.....Capt. T. F. Peck, Commissioner of Agriculture
The Farmers' Best Crop.....Mrs. Rose Nipher
The Care of Children in the Home.....Mrs. T. G. Settle
Discussion.
The School Lunch.....Mrs. Hayes Hall
Discussion.
(a) How I Raised My Tomatoes. (b) How I Did My Canning.....
.....By Two Members of the Girl's Tomato Club
The Right Books for Children.....Miss Mary Skeffington

THIRD DAY—AFTERNOON.

Sanitation and Hygiene in the Home.....Dr. H. H. Shoulders
Idea Exchange, With Discussion of Home Problems.....Mrs. John Walker
What Reading Means to the Farm Women.....Mrs. Pearl Kelley
Benefits the Country Woman May Derive from the State Fair.....
.....Mrs. J. O. Rust
Election of Officers.

THE WISE AND THE FOOLISH BOY.

A thrifty Wisconsin German farmer twelve years ago had two boys. The eldest took a great dislike to farming. He was bound to go to the city. Great fortunes were to be made there. He sneered at his father and his slow ways. So he went to Chicago.

The younger boy stayed on the farm. He had an inquiring turn of mind and he read all the good papers and books on farming he could get, and spent one winter in a short course at the agricultural college. Today he is the owner of a farm worth \$18,000. The older brother is a street car driver, expecting to make a fortune the same as ever. There are thousands like him, too.—*Farm and Home.*

STATE AND COUNTY FAIRS.

By J. W. Russwurm, Secretary Tennessee State Fair.

The State Fair is now a State institution. It is your fair, my fair, and a fair for the people of Tennessee. It has grown more wonderfully for the short time of its existence than has any like institution in this country.

We got out of our baby clothes in one or two seasons and made more progress with our State Fair in six years than was made by some of the older fairs in twenty years of their existence, and we are still growing. Farmers, breeders, merchants and manufacturers are generally taking the opportunity to show the results of their labor at the State Fair more than ever before.

The interest of the exhibitor is not greater than that of the citizen. This is clearly shown by the increased attendance each year. This increased attendance is due to the good care given the State Fair by the Tennessee press. We want to confess our gratitude to the newspapers for their generous support. It is our regret that we are unable to give them but small compensation in return. Their influence is unquestioned; their services to the fair are invaluable.

The State Fair, to fulfill its mission, must be an educational institution. It must ever promote the cause of agriculture; to discover how best to obtain results; how to secure the greatest reward for our labor; how to increase yield and reduce cost; how best to feed our live stock and improve the breeds; how to save the fertile fields from becoming barren soils; how to make agriculture more nearly a science, our homes more beautiful, our people happier. This is the purpose of the State Fair.

The State Fair is recognized as a beneficial institution in a great number of our States, and as such receives legislative support. Some of the causes for such action are that no single institution of learning has contributed to such a great extent in accentuating the desire for pedigreed stock as has the State Fair. Here are seen the best type of horses, cattle, sheep and swine, the finished product for which every farmer is striving to attain. Here are seen the best fowls for farm use; the best products of the soil; the best methods of cultivation; the best arrangement for farm buildings and fields; the best methods of rotation of crops; the balanced ration for feeding; the various methods for the water supply and the best lighting plant, and many other educational features. Here are seen also all kinds of farm machinery, so that, should a farmer have the purchase of any par-

ticular machine in view, by attending any one of our great State fairs he can see all of the leading makes exhibited side by side, with an expert in charge who points out its particular merits, making it possible for him to make a judicious selection for the uses desired.

In the live stock show there are mighty battles of the breeds. In the show ring there is waged a royal contest of blood and breeding. Every animal seen is fit to be a king among its kind. Wherever you find a good animal, there you will find a Man. A first-call animal seldom has a second-class owner. Show me the animal that scores eighty and ten and I will show you a man who scores ninety and ten.



View of Buildings on State Fair Grounds.

"I believe, as surely as day follows night, that when we improve the animal and improve the plant, we also improve the human race," says A. P. Sandles, of Ohio.

Some may say that such instruction at most of the fairs only lasts five or six days each year. We will grant that such is the case. The persons who attend are the busy men—the men of affairs; the men who provide the sinews to carry on the affairs of the country, state and nation; the men who have no time for extended schooling at the experimental stations or schools, but must gather their information from object lessons, the press and actual experience. The school holding 180 days each year must have 600 students to equal an attendance

of 100,000, and we think that number is about the average attendance for all of the State Fairs. Many of them have several times this number. Therefore, as an educational institution, it is but just to compare its efficiency with that of the school with like attendance, and we believe it is superior from the fact that an object lesson is the very best from which permanent instruction can be obtained.

President McKinley said: "Fairs and expositions are the time-keepers of progress. They record the world's advancement. They stimulate the energy, enterprise and intellect of people and quicken human genius. They go into the home. They broaden and brighten the daily life of the people. They open mighty storehouses of information to the student.

"Every fair, great or small, has helped to some onward step. Comparison of ideas is always educational, and as such instructs the brain and hand of man.

"Friendly rivalry follows, which is the spur to industrial improvement, the inspiration to useful invention and to high endeavor in all departments of human activity. It exacts a study of wants, comforts, and even the whims of the people, and recognizes the efficacy of high quality and low process to win their favor.

"Without competition we would be clinging to the clumsy and antiquated processes of farming and manufacturing and the business methods of long ago, and the twentieth century would be no further advanced than the eighteenth century.

"The wisdom and energy of all the nations are none too great for the world's work. The success of art, science, industry and invention is an international asset and common glory. After all, how near one to the other is every part of the world."

Modern inventions have brought into close relation widely separate people and made them better acquainted. Geographic and political divisions will continue to exist, but distances have been effaced.

Some of the State Fairs already have well-equipped grounds, as some of the following values of plants will testify: Illinois, \$1,106,515.00; Texas, \$1,087,500.00; Iowa, \$900,000.00; New York, \$850,000.00; Minnesota, \$736,140.00; Indiana, \$642,000.00; Michigan, \$602,911.48; Oklahoma, \$331,583.29; California, \$300,000.00; Nebraska, \$283,694.00; Wisconsin, \$250,000.00.

These figures represent appropriations from the various states for permanent buildings on their grounds. These progressive states regard their appropriations to the State Fair the best investments that

they make. They regard these fairs as their best educational institutions and contribute liberally to their support.

Right here I want to say that the farmer should demand of our political bodies that they do something worth while to the cause of the State Fair.

Evidence on every hand proclaims the progress of agriculture and the farmer and the vital importance of his work. The time is right now when his needs and his interests should be considered first and his just demands moulded into law.

The day is here when the world must respect him who produces the necessities of life. Those who engage in agriculture and its



Barns at State Fair Grounds.

kindred interests should not bend the knee to the spurious statesman and cheap politician whom they feed; those who produce ought not to be obliged to beg favors of those who only consume. The farmer should not beg for his just due. He should put on his armor and fight, and see that defeat and political disaster overtake those who would deny his just claim or seek to make him subservient to any set of men.

The want of legislative encouragement of our agricultural interests has placed a galling restraint on our prosperity as compared to

other states. The State Fair needs equipment. It can only be obtained by legislative action, and we should see to it that not only the State Fair, but every other educational institution that promotes the cause of agriculture is cared for in a substantial way by liberal appropriations.

With the proper equipment, the Tennessee State Fair will occupy a place second to none in this country.

THE SOCIAL COUNTY FAIR.

Now, we have said much about the State Fair. Besides having all these benefits, which I have enumerated, as derived from the State Fair, the local fair, or county fair, has the strong social feature added.

This could not be better told than by quoting from an address delivered by Hon. A. P. Sandles, Secretary of the Board of Agriculture of Ohio:

"The county fair will be held in high favor so long as old friends love to meet and tell to each other the joys and woes of a passing year.

"The mystic, invisible chord of friendship which runs from one heart to a thousand others is the secret power which draws the young and old, the rich and poor, together in one grand reunion under the shade of the spreading trees which grow upon the grounds of 'The Old County Fair.'

"When you clasp again the hands of those you knew when you were boys and girls and sweethearts together, it will drive dull care away, and the songs of the birds will be sweeter, the burdens of life be lighter, the ties of true friendship be stronger, the cream on the milk be thicker, and the roses and lilies more fair.

"It is the place where youth and maid exterminate roasted peanuts and red lemonade, and joyously wander, hand in hand, through the gardens and fields of the future, knowing little, caring less, of the world and its woes. The plains to be crossed, the mountains to be climbed, the seas to be sailed and the harvest to be gathered give them no concern. It's a clear sky and is yet only life's morning.

"It's the time and place for father and mother to rest and refresh; time to pause in life's struggle and forget all about gold; time to stop for a day the plow that is turning the furrows of time. 'The heart of the tailor has throbbings that stir not the bosom of kings' if you stop now and then for a day to mingle and mix with your fellows.

"Perhaps it was there that grandfather first met and smiled at grandmother. You know the rest. There is a tide in the affairs of

men which, taken at the flood, leads on to marriage, a happy home and prattling childhood. A hearthstone, a rocking cradle, a mother's lullaby song and a father's strong right arm keep the world a-moving on.

"There is no place on the outside of God's green earth where two hearts are more sure to beat as one than at the County Fair.

"Don't you remember the day when God made the sun shine the brightest, a quiet place, a pair of trusting eyes, a hand in yours, and two heads close together? This great big round world only had two



Agricultural Building, State Fair.

people in it then—you were one and she the other. And the words she said were the words you wanted to hear—and the promise was made.

"The whole thing started about fair time, didn't it? Had a good fair that day, of course, long time ago. No doubt the sun doesn't shine now as it did then; perhaps that quiet place would be hard to find; perhaps those eyes have closed in eternal sleep; that hand may have vanished and be cold; that voice may be stilled in death; but the memory of that day and that place and that old sweetheart is planted in your heart forever. And were the whole world yours you would give it all, old man, to go right back there now."

PRESENT STATUS OF TICK ERADICATION WORK IN TENNESSEE.

*Dr. J. A. Kiernan, U. S. Bureau of Animal Industry, Before West
Tennessee Farmers' Institute, Jackson.*

It is a pleasure to be able to tell this audience that ere a twelvemonth passes by the entire area of the State of Tennessee will have been cleaned of the cattle tick and entirely released from quarantine.

With the completion of tick eradication in Tennessee, and when it is released from quarantine, it may justly be proud of its achievements, for it will be the first state in the United States that will have accomplished this great work of wiping out the quarantine. In the accomplishment of this achievement there were times when it seemed almost impossible to make satisfactory progress. The skies were not always bright and cheery, and our opinions as to the policy of conducting the work were not always in accord.

I know it seemed to many that the regulations that were put in operation were too rigid, drastic and unyielding, but let me say to you, friends, that these regulations were adopted by your State Commissioner of Agriculture and State Live Stock Inspector, were founded on regulations that had been tried and proven successful by the United States Bureau of Animal Industry—that organization that has protected the live stock interests of the United States against all the maladies that stock are heir to.

It was that organization that wiped out the great plague of pleuropneumonia and twice banished from these shores the most malignant disease that ever threatened our live stock interest—a disease that has waged war and destruction in almost every nation of the world and is today laying low the magnificent herds of pure-bred cattle in the British Isles. The foot-and-mouth disease that now exists in England, Ireland and Scotland made two short, impressive visits to our shores, causing the loss of hundreds of cattle at an expense of thousands of dollars. Had not the Bureau of Animal Industry been equipped with a force of scientific experts equipped to quickly stamp out these outbreaks, there is no telling what the calamity would have been to the whole nation.

With our millions of dollars invested in live stock, it was possible that this disease would have spread from ocean to ocean—would have devastated enormous numbers of our valuable cattle. In a few short months both outbreaks were checked and entirely stamped out, and today no disease of that character exists in the United States.

It was in battling against such outbreaks of disease that the Bureau of Animal Industry learned by experience the necessity of promulgating and enforcing rigid quarantine measures—rules and regulations that, when adopted, were to be observed by every class of citizens—by the rich stock owner and the widow who possessed only one milk cow. It is only by the treatment of all alike that satisfactory results can be obtained.

Since 1896 forty-one counties in Tennessee have been entirely freed of the tick, with the result that the people of these counties have been truly benefited—benefited by being relieved of further inconvenience caused by quarantine regulations, and benefited in a material way by the increase in the value of their cattle, by the increase in their number, and by the improvement of the quality. Listen to the voices of some of the people in that area that has been freed of ticks:

JASPER, TENN., April 19, 1912.—Dear Sir: Farming and cattle raising are the chief industries of Marion County, and in the eradication of the cattle tick the citizens have been greatly benefited. In fact, this action on the part of the government has done more to increase the profits of the farmers and encourage the raising of blooded cattle than any one occurrence in the history of the county.

Since this county has been placed above the quarantine line there has been a marked increase in the cattle business, and that is the avocation this section is especially adapted for. Just the fact that cattle are raised and fattened above the quarantine line makes a perceptible difference in the price per pound in the Northern and Eastern markets.

This stroke of progress on the part of the government not only caused hundreds of farmers of this county to invest in blooded cattle, but along with this advancement came improved farming methods. It is natural that when men get one thing of the best they then strive to bring all their interests up to that standard. This is being done in this county, and we are now farming more intelligently and getting better results.

The eradication of the cattle tick is a great thing for Marion County, and all the citizens highly appreciate this commendable work of our beneficent government. Yours truly,

CHAS. T. WILLIAMSON,

County Judge, Marion County, Tenn.

LIVINGSTON, TENN., April 20, 1912.—Kind Sir: The people of Overton County are highly pleased with the result of tick eradication here. The quarantine has been lifted and our cattle go on the market in much better condition than before, and, therefore, bring better prices, because they get much more flesh, both on the wild ranges and in the enclosed pastures.

We have absolutely gotten rid of all ticks of every kind which were here in abundance four years ago. The eradication of the cattle tick was the greatest boon to our stock farmers of anything that ever has or could be done for them, and now they know it, but when the movement first struck this county it was the most unpopular thing ever heard of, and now the most popular. Yours truly,

J. R. HOGUE,

County Judge, Overton County, Tenn.

The benefits that these people have received will come true in every remaining county in Tennessee. All that is necessary is to have faith in believing in your fellow-Tennesseans—allay judgment until you have given the work a fair trial.

Tick eradication has won its place on merit. It has reached the people's ears because it has been applied to them justly, uniformly and honestly. The measures employed to obtain the cooperation of the people in several western counties of Tennessee might appear to some to be too drastic, but, having put these measures in operation, they were accepted by the people, and today there is scarcely a man, woman or child in any of these counties that would raise their hand to have the work discontinued.

We have worked in harmony together, and cooperation will continue in this agreeable way until the work is entirely completed. We confidently believe that by September 1, 1913, every county in West Tennessee will have accomplished this work and be in the free area, removed from the rigid restrictions of quarantine, placed above the unenviable position of raising diseased cattle; the privilege to ship their stock, not in condemned cars, to be unloaded in diseased pens at market points; the privilege to ship to the open markets of the world, to enjoy the privilege of the highest prevailing prices the live stock are entitled to. This is the price of eradicating the tick. This is the privilege that most of Tennessee now enjoys, and it is hoped that, with the aid of the state and federal authorities, the balance of the state will enjoy the same privilege in the near future.

SOURCE AND USE OF FERTILIZERS.

R. T. DeBerry, of Humboldt, Before West Tennessee Farmers' Institute, Jackson.

We people of Tennessee are today buying thousands of tons of commercial fertilizer, and many of us are buying them without any knowledge of what we need or whether what we buy will answer the purpose for which we are buying it.

In buying commercial fertilizers we aim to get three elements of plant food—nitrogen, potash and phosphoric acid—these three elements of plant food being contained in every complete fertilizer, and no fertilizer is a complete fertilizer unless it does contain these three elements; but every man should understand enough about fertilizer to know whether he needs this complete mixture or one that contains only one or two of the above-mentioned elements.

There enters into the making of plants during their growth some ten or eleven different elements, but as most all soils contain a sufficient supply of all except these three, it is useless for me to take up your time in discussing any except them.

Nitrogen being the most costly as well as the most elusive of these elements, I shall take up its consideration first. Nitrogen exists in three forms, and it is necessary to understand these forms before the buyer can make an intelligent decision in the matter of purchasing nitrogen, for much depends upon the form in which you get this nitrogen as to whether you get value received for the money spent.

The three forms to which I have reference are the organic, ammoniate and nitrate forms, organic being the form in which nitrogen exists in all animal and vegetable matter; the ammoniate is the form in which it exists in sulphate of ammonia, and nitrate the form which it has in nitrate of soda and nitrate of potash, and this latter is the form in which it must exist before any plant can take it up and make use of it for its own development.

If we use material containing organic nitrogen, some time must elapse before it can be converted into a nitrate in the soil; and for crops which mature quickly we want the nitrogen in a more readily available form, so we must be governed by the crop upon which we are using this nitrogen as to whether we use the organic, the ammoniate or the nitrate form, and I shall mention briefly the crops for which the different forms are suited as I discuss the materials containing the different forms.

In commercial fertilizers the cheapest and most readily available

form in which to purchase nitrogen is nitrate of soda, as in this it is already in the form of a nitrate and available for the use of plants immediately upon its application, the effects of a slight application being shown almost at once by the plants taking on a darker green color and growing more rapidly.

Nitrate of soda—sometimes sold as Chilian saltpetre—forms in large quantities on the western coast of South America, where no rain falls, and contains from 15 to 16 per cent of pure nitrogen, and is the standard by which the value and availability of other sources of nitrogen are measured.

For early vegetables this is the best form in which to get your nitrogen if it is properly applied for the use of the growing plant, but is not a good form for crops which can make use of the entire growing season.

Ranking next in value to the soda comes dried blood, which is nearly as readily available so far as its nitrogen content is concerned, and it has the advantage also of supplying a slight amount of humus to your soil, which the soda does not do, and its effects are slightly more lasting in the soil.

Cotton-seed meal, the next in order of availability after dried blood, is one of the cheapest and most readily procurable materials as a source of nitrogen that can be used in the South, and it also has the advantage of furnishing vegetable matter to the soil.

The nitrogen in both dried blood and cotton-seed meal exists in the organic form, but the process of nitrification which it must undergo in the soil to become available for the use of plants is very rapid—rapid enough, in fact, to make either of them desirable for use upon any crop needing nitrogen.

Cotton-seed meal, figured on the basis of the actual plant food which it contains, is worth about \$29.00 per ton, but the vegetable matter which it adds to the soil probably makes it worth more as a fertilizer than the actual plant food would show.

Sulphate of potash is a by-product of gas works and the manufactures of bone charcoal for sugar refiners and of coke for iron furnaces which furnishes a supply of nitrogen, but its use should be avoided where it is to be used in connection with muriate of potash, as a combination of the two produces a gas that is poisonous to plant life.

Pulverized fish scrap from the fish oil factories along the coast and tankage which is the dried and ground-up material from the waste matter of the large slaughter houses are two other good sources

of nitrogen, but, derived from these sources, it is longer in becoming available than from either of the before-mentioned sources, and for this reason might be preferable on grain crops; but no farmer should ever have to purchase nitrogen for grain when he can grow leguminous crops, such as clover, peas, beans and vetches, and allow them to collect it from the air without cost to him.

This nitrogen which I have been discussing furnishes the material for the stalk and leaves of plants, and plants which show a stunted or sickly, yellow growth indicate a lack of nitrogen in the soil, while overgrown plants with no fruit or seeds indicate an excess of nitrogen as compared to the other two elements, and soils showing this kind of plant development should have potash and phosphoric acid supplied to correct the deficiency.

The next element of plant food, in the order of its importance in determining crop yield, is phosphoric acid. This acid is a compound of hydrogen and phosphorus, which, in connection with some base like lime, forms phosphates, its principal source being the phosphatic rock, great beds of which exist in our own state.

Some authorities treat this under the name of phosphorus, but as no plant can take up the element except as phosphoric acid, I prefer to speak of it in the form that plants must have it before they can use it.

The phosphatic rock mentioned above is first finely ground and then treated with sulphuric acid; the sulphuric acid combines with two parts of the lime in the phosphate rock, making gypsum or land plaster, leaving one part of lime and one part of phosphorus combined, which is soluble in the soil water and thus made available for the use of plants.

Bone meal is another source of phosphoric acid, and it was formerly thought that the acid from this source was superior to that found in the rock, but later investigations have shown that phosphoric acid is exactly the same wherever found—its value depending alone upon its availability—and that the superior quality attributed to that found in bone was due to the nitrogen contained in the bone, and not to any superiority of the acid from that source.

In buying a fertilizer for its phosphoric acid content, all that you need to consider is the availability of the acid, and as it is cheaper in the form of acid phosphate, and just as valuable, that, of course, is the form in which to buy it. Phosphoric acid hastens the development and maturity of the fruit and seeds of all plants, and frequently the supplying of this element alone to our soils will enable them to produce maximum crops.

Potash, the third element of plant food of importance that we get in commercial fertilizers, is the result of oxidation or the combination of oxygen with the metallic element, potassium, and finds its greatest source in the great potash mines at Stassfurth, Germany, coming from there to this country in the form of kainit, sylvinite, muriate and sulphate of potash.

Potash, as it comes from the mines, is in the form of kainit and sylvinite, the kainit containing about 12 per cent of actual potash and the sylvinite about 20 per cent of potash, accompanied by a large per cent of chloride of sodium or common salt. These are treated to remove the excess of salt, and muriate and sulphate of potash are the result, the muriate containing about 50 per cent of actual potash and sulphate 55 per cent.

Either of these forms is cheaper than the crude forms of kainit or sylvinite when plant food value is considered, but the muriate is usually cheapest of all; but for crops having a large content of starch or for heavy, clayey soil the sulphate is probably to be preferred. Wood ashes and tobacco stems or other waste material from tobacco factories are also sources of potash and may be used where their cost is not excessive.

All plants which have a great deal of woody fibre or a large content of starch or sugar in their make-up draw heavily upon the supplies of potash in the soil, and this element should be applied in sufficient quantities to meet their needs if best results are to be gained in the growth of the crop.

There is one element which is usually considered in this connection, though it is not a fertilizer in the sense that it contains actual plant food, and that is lime. Lime, strictly speaking, is a reagent rather than a fertilizer, though the results obtained from its use are so pronounced that most users think that it must be a plant food; but this is not true, its beneficial effect being due to four things which it does. First, it corrects whatever acidity there may be existing in the soil, and this enables plants to flourish where otherwise they would not, as most of our cultivated plants do best in a sweet soil, and this is especially true of all the clovers.

In the second place, it sets free by chemical action plant food that would remain locked up so that the plant could not use it without the presence of lime. On lands that are stiff and hard to work it renders their mechanical condition better, rendering them easier to pulverize and get into condition for crop-growing, while on sandy lands it

tends to render the texture more compact and makes them hold moisture better than the same nature of land not limed.

The only way for a man to determine whether it pays to use fertilizers on his soil is to make careful tests on his different soils, and, by weighing or measuring the yield, decide for himself whether he is justified from a business standpoint in buying complete fertilizers.

SILOS AND SILAGE.

J. N. Meroney, at West Tennessee Farmers' Institute, Jackson.

Diversified farming is necessary to sustain the fertility of any agricultural country. No section can keep up its producing powers if confined to a one-crop system of farming. There must be a rotation of crops and the keeping of live stock on the farm to feed the soil or it will become exhausted.

It should be the aim of every farmer to at least maintain, if he cannot increase, the productive powers of his soil, and to do this he must sell off as little of its fertility as possible in grain and hay, and make a finished product by feeding his raw material on the farm and selling it off only in merchantable live stock, so that he can return the valuable elements of fertility to the soil in the animal manure.

But to make the growing of live stock profitable on the farm it must be fed economically. The silo helps to do this. The use of the silo for winter feeding and the intelligent use of summer pastures forms a combination that is worth the attention of any intelligent farmer, for by it he can sustain and increase the fertility of his farm every year and show up dollars on the profit side of his cash book at the same time.

The fast-increasing population of our country makes it an absolute necessity for us to get larger yields per acre than we have been doing. The farmer has the job on his hands of feeding the earth's fast-increasing millions of people, and it is a big job. The agricultural lands have almost reached their maximum acreage, so those acres must be made to produce more or some must go hungry. This will require better and more thoughtful farming. We must study more closely the principles of economy in our farm work and stop all unnecessary wastefulness.

The use of the silo will help us more than anything else along these lines, because it will enable us to save so much that has been going to waste on the farm.

But what is a silo? Some of you know, but perhaps others do not. A silo is any kind of an air-tight structure in which to store the green

and succulent foods of summer and keep them in almost the same desirable condition to feed through the winter.

The silo must be air-tight, and should be built at least twice the height of its diameter. They may be built of stone, brick, concrete or wood.

To the man who has plenty of money to spend and wants something substantial or fancy, the concrete silo may be his choice; but to the small farmer, who has to make every dollar worth one hundred cents in his business, I come with a message of economy and urge him to build a round wooden stave or tub silo. This is undoubtedly the cheapest form, and they have proven very satisfactory wherever they have been given a fair trial. They are within the reach, financially, of the small farmer; simply and easily built by the farmer himself on the farm with only his regular farm labor, and will certainly pay him better than any investment he ever made.

The round stave silo is built of plain, straight 2x4 pine studding, set up like a huge tub, and drawn together and made air-tight with iron hoops of 5-8 round iron, with threads and nuts on each end, and passing through iron blocks or lugs, so they can be drawn tight with a large wrench. If the water will not rise in the soil, it is cheapest to dig down in the ground a round cister eight or ten feet deep and the diameter of the silo.

Lay around the top of this circular cistern a border of brick, two or three bricks high, as a foundation for the wooden tub to rest on. Lay the brick with cement mortar, and plaster down on the inside of the clay wall about two feet to keep out surface water. If necessary, plaster all the way down on the clay wall like a cistern. When all is ready it is easy to set up the big wooden tub and gird it firmly with the iron hoops, and after all is drawn up as tight as possible, mark out the doors between the hoops. Two or three doors are enough. Fit on these doors before sawing out heavy wood or iron battens, fitted to the curve, so the doors will retain their shape when sawed out. Saw the doors with a bevel larger on the inside, so the pressure of silage in filling will hold in place.

Plaster around the bottom of the wooden tub, where it sets on the brick foundation, with cement mortar to make it air-tight, and it is ready to fill. Some kind of cheap gabled roof can be put up after filling to keep out rain and snow.

Now, what should be put in this for silage? Any kind of green forage can be saved in the silo, but corn and cowpeas, grown together and well mixed in the silo, are the best materials for the silage.

And it is best to grow for this purpose some of the prolific varieties of corn. A corn that will produce from two to six small ears to the stalk is better than the large, one-ear varieties.

In filling, begin packing by tramping from the bottom; it cannot be cut too fine nor packed too closely. Tramp all the time in filling. The corn should be a little too hard for table use, and packed in fresh and green, as cut from the field.

When done filling, cover the good silage with some kind of trash or litter, and wet it so as to get a rotten, air-tight cover on the good silage as soon as possible. The silage will cook of its own heat and stay hot all winter.

When time to begin the feeding, throw off the rotten mass on top and feed only the sound silage. Feed off a layer from the top every day. Do not let air in from the bottom and it will keep good while it lasts.

The use of silage as an economic cattle food is no longer an experiment, but a well demonstrated fact.

In Tennessee the farmer can grow his silage as a second crop after harvesting wheat, oats, rye or clover hay. He can cultivate the crop, cut and pack in the silo for one dollar and a half per ton, or he can build a fifty-ton silo, grow the forage and pack it in the silo for about two dollars and a half per ton; or he can buy his gasoline engine and silage cutter, build a fifty-ton silo, grow the material and fill it for about six dollars and a half per ton for the first year and have his engine, cutter and silo for use for many years to come.

When we consider the present prices of feedstuffs—wheat bran, \$28 per ton; cotton-seed meal, \$32 per ton; good clover hay, \$25 per ton—it seems strange that the intelligent farmer would any longer put off the building of a silo on the farm. A fifty-ton silo, well filled, will feed twenty head of milk or beef cattle for five months, and always convenient to feed in any kind of weather. Think carefully of these many advantages and put them in practice.

Poultry will fatten fastest on ground feeds and cooked feeds. Ground corn and oats soaked in milk for twelve hours make an excellent ration. Other things such as unused, cooked vegetables, may be given, but they are not absolutely necessary. Good grit should be given once or twice a week. Any grains raised on the farm may be used, so long as corn makes up at least half of the ration. But they should be ground to get the quickest results. We don't think it pays to feed matured poultry longer than three weeks.—*Ex.*

FARM PRODUCTS OF TENNESSEE.

The complete results of the agricultural census for Tennessee with reference to crops are presented in a bulletin soon to be issued by Director Durand, of the Census Department, Department of Commerce and Labor.

The total value of crops in Tennessee in 1909 was \$120,706,000. Of this amount, 89.9 per cent was contributed by crops for which the acreage as well as the value was reported, the remainder consisting of the value of by-products (straw, garden and grass seeds, etc.) derived from the same land as other crops reported, or of other orchard fruits, nuts, forest products and the like. The combined acreage of crops for which acreage was reported was 6,265,143, representing 59.4 per cent of the total improved land in farms (10,890,484 acres). Most of the remaining improved land doubtless consisted of improved pasture, land lying fallow, house and farm yards, and land occupied by orchards and vineyards, the acreage for which was not reported.

The general character of Tennessee agriculture is indicated by the fact that somewhat less than one-half (45.8 per cent) of the total value of crops in 1909 was contributed by cereals, about one-sixth (17.8 per cent) by cotton, and about one-tenth (10.5 per cent) by hay and forage. The remainder, representing in value 26.6 per cent of the total, consisted mostly of potatoes and other vegetables, forest products, tobacco, fruits and nuts.

The total value of crops in 1909 was 70.6 per cent greater than in 1899, this increase being, no doubt, due in part to higher prices. There was a decrease of 4.7 per cent in the total acreage of crops for which acreage was reported, the principal absolute decrease being that in the acreage of cereals and the principal absolute increase that in the acreage of hay and forage.

The leading crops, as presented in an earlier report, in the order of their importance as judged by value, are: Corn, \$45,819,000; cotton, \$17,967,000; hay and forage, \$12,618,000; wheat, \$6,913,000; tobacco, \$5,662,000; (estimated) \$2,716,000; and oats, \$2,378,000.

In 1909 the total acreage of potatoes and other vegetables was 167,224 and their value \$10,431,000. Excluding potatoes and sweet potatoes and yams, the acreage of vegetables was 100,055 and their value \$7,016,000, both acreage and value being decidedly greater than in 1899.

The raising of flowers and plants and of nursery products was also of some importance in Tennessee, 4,215 acres being devoted to them in 1909 and the output being valued at \$1,042,000. Most of

the product was raised on farms where these branches of agriculture were carried on as an important business.

Strawberries are by far the most important of the small fruits raised in Tennessee, with blackberries and dewberries ranking next. The value of the strawberry crop in 1909 was \$835,799; that of blackberries and dewberries, \$67,496. The total acreage of small fruits in 1909 was 12,539 and in 1890 12,914, a decrease of 3.1 per cent. The production in 1909 was 13,895,000 quarts, with 15,200,000 in 1899, and the value was \$924,000, as compared with \$593,000 in 1899.

The total quantity of orchard fruits produced in 1909 was 6,480,000 bushels, valued at \$3,459,000. Apples contributed nearly three-fourths of this quantity; peaches and nectarines most of the remainder. The production of grapes in 1909 amounted to 1,979,000 pounds, valued at \$85,423; that of nuts to 784,000 pounds, valued at \$14,041, and tropical fruits produced in 1909 were valued at \$4,127.

The production of all orchard fruits together in 1909 was 15.8 per cent more than in 1899, while the production of grapes decreased decidedly. The value of orchard fruits increased from \$1,480,000 in 1899 to \$3,459,000 in 1909, and that of grapes decreased from \$120,199 in 1899 to \$85,423 in 1909. It should be noted that the values for 1899 include the value of more advanced products derived from orchard fruits or grapes, such as cider, vinegar, dried fruits and the like, while the values for 1909 relate only to the products in their original condition.

The total value of sorghum cane and syrup produced in 1909 was \$1,146,000, as compared with \$647,000 in 1899.

The census schedule for 1910 called for the "value of all firewood, fencing material, logs, telegraph and telephone poles, materials for barrels, bark, naval stores or other forest products cut or produced in 1909, whether used on a farm, sold or on hand April 15, 1910;" and also, in a separate item, for the "amount received from sale of standing timber in 1909." There were 132,750 farms in Tennessee (54 per cent of all farms in the state) which reported forest products in 1909, the total value of such products being \$8,511,000, as compared with \$5,087,000 in 1899, an increase of 67.3 per cent.

Of the value in 1909, \$4,560,000 was reported as that of products used or to be used on the farms themselves, \$3,050,000 as that of products sold or for sale, and \$901,000 as the amount received for standing timber. It should be noted that forest products not produced on farms are not included in this report.

Straw and corn stalks derived as by-products from the production

of grain and corn have a considerable value for feed and other purposes. They are, however, mainly consumed on the farms producing them. The Census Bureau made no attempt to ascertain the total quantity or value of these products, but the schedules called for the quantity and value of those sold during the year 1909. The returns show that 413 farmers in Tennessee sold during 1909 2,002 tons of straw, for which they received \$10,330, and that 816 farmers sold 1,273 tons of corn stalks and leaves, for which they received \$9,679.

SUMMARY OF GAME LAWS OF TENNESSEE.

The hunting season, during which quail may be legally killed, opened Friday, Nov. 15, and will continue to March 1, 1913.

Following is a brief summary of the game laws of Tennessee:

All game, not held by private ownership legally acquired, is the property of the State.

Open season, or time when game may be lawfully killed:

Quail, Nov. 15 to March 1.

Grouse, pheasants, meadow larks, wild turkeys, Nov. 1 to March 1.

Ducks, geese, plover, snipe, woodcock, robins, Oct. 1 to April 15.

Doves, teal and summer ducks, Aug 1 to April 15.

English ringnecked pheasants, Dec. 1 to Jan. 1.

Squirrels, June 1 to March 1, except in certain counties.

A few counties have no closed season.

Rabbits at all seasons and sold without license.

Deer protected until Oct. 1, 1915.

Certain birds and animals deemed injurious not protected.

Shooting after sunset and before sunrise, or on Sunday, or on the public highway prohibited.

Sale of game limited to that lawfully killed, for consumption within the State solely, to the open season and five days thereafter.

Limit on the bag, fifty ducks or thirty quail, or other birds.

Shipment of game from the State prohibited and within the State permitted only from one licensed dealer to another.

Commissions of wardens appointed by the Department of Game, Fish and Forestry terminate July 1 of each year. Wardens must report all cases of arrests and trial to the Department on blank forms furnished them, and are liable to fine and imprisonment for failure to do duty.

Nests and eggs of game birds protected.

Licenses are required of nonresidents market hunters, dealers in

game, including hotels and restaurants, also of all resident shooters who have not first obtained written permission of land owners to shoot on their property. Licenses are obtainable only from the Department of Game, Fish and Forestry, and expire on the 31st day of December, next, after their issuance.

Nonresidents may take with them from the State fifty ducks or thirty quail, and guides accompanying nonresidents are required, under penalty, to see that nonresidents are licensed. Application blanks for licenses furnished free of charge on request.

All non-game birds, their nests and eggs protected at all seasons of the year.

Trapping or netting quail prohibited except under permit of the Department for breeding purposes.

AGRICULTURAL COURSE AT LEBANON.

Beginning December 1, 1912, and continuing until March 1, 1913, (three months) Cumberland University, at Lebanon, Tenn., will offer a special course in Scientific Agriculture, also a practical course in Land Surveying.

Some of the things taught in the Agricultural course are as follows: The best way and time to plow; the preparation of a seed bed, the selection of seed; the rotation of crops; the maintenance of the fertility of the soil; the care and breeding of farm stock; how to fight insect pests; the proper care of an orchard; the keeping of farm accounts. Also the sources of information on all subjects connected with the farm will be taught.

Most poor farms can be made into good farms by proper management. This course will undertake to teach a young man what the methods are which have proven to be successful and to teach him how to apply those methods to his own farm.

This course will be in charge of Professor H. A. Hill, Professor of Biology and Agriculture in Cumberland University. Professor Hill has made a thorough study of these subjects from a scientific viewpoint, and he has had practical experience in connection with many of them.

The course in Land Surveying will include the following subjects: The measuring of fields of regular and irregular shapes; establishing division lines; running levels in connection with surface and underground drainage, etc.

This course will be in charge of Prof. W. H. Drane.

DEMONSTRATION AND CORN CLUB WORK.

Under a new arrangement just announced the government farm demonstration and boys' corn club work in Tennessee will hereafter be under one management, Bradford Knapp, director in charge of the work, having planned an extension of both. The demonstration farms, it is stated, will be established in a number of places not heretofore reached.

H. D. Tate, state agent, will have general charge of both branches, and will be assisted by J. R. Fewell, assistant state agent, who will have direct charge of the boys' corn clubs.

Thomas A. Early, who had charge of the West Tennessee department in the corn club work, is now financial secretary of the Knapp memorial committee of raising a \$150,000 fund for the Knapp memorial school of country life. J. M. Dean, head of the Middle Tennessee department, and C. F. Stripler, of the East Tennessee department, have been secured in the work of adult farm demonstration work.

RUSH THE PIGS TO THE 200-POUND NOTCH.

Taking eight-weeks-old pigs of good quality and breeding, can we grow them on peanuts, chufas and corn up to 90 pounds weight and then put them on corn three-fourths and cotton-seed meal one-fourth and have them reach a weight of 125 pounds at four to five months of age?

It will be difficult to bring pigs up to 125 pounds weight on these feeds at four months of age. They might be made to weigh that much at five months. With some skim milk the weight might be made at the younger age in some cases, but not probably to this average.

But why turn off these pigs at 125 pounds weight? They should make very rapid gains from 100 pounds up to 200 pounds and on such feeds very cheap gains. In fact, it will be easier to make a gain of 100 pounds in three months on pigs after they have reached a weight of 100 pounds than to bring them to a weight of 100 pounds at four months of age. The early gains may be made a little cheaper, but, counting the cost of keeping the sow, it will not be the most profitable to sell pigs at a weight of 125 pounds. It will almost certainly pay better to keep them until they reach a weight of 175 to 225 pounds if such cheap feeds are available in sufficient quantities.—*The Progressive Farmer*.

**AGRICULTURAL CLASS OF GROVE SCHOOL, PARIS,
AT JACKSON FARMERS' INSTITUTE.**



The accompanying illustration is a good likeness of the members of the agricultural class of Grove School, Paris, who attended the Farmers' Institute at Jackson recently. This is the way they looked while standing on the steps of the Madison County courthouse. The boys were under the care of Prof. Arnold and Hillman Moody. They spent two days and one night in Jackson, saw the city, inspected the West Tennessee experiment farm, attended the meeting of the West Tennessee Boys' Corn Club, where they put a Henry County boy in one of the offices, and had an all-round pleasant, profitable and enjoyable trip.—*Paris Post-Intelligencer*.

LOUSY SITTING HENS.

My experience is that a sitting hen will breed more lice and mites than a dozen which are not sitting. I make racks for the nests in such a way that each nest can be removed separately when desired, and when I remove a sitting hen I remove the nest also, empty it and burn up the nesting material. Then place the nest box over the flames for a minute or so and it is ready to use again. Put in some fresh nesting material, sprinkle in some lice powder and some on the hen.—*Farm and Home*.

FIELD AGENT IN EAST TENNESSEE.

In order to thoroughly reach the farmers of East Tennessee, the Southern Railway Company has added S. A. Miller, of Cedar Bluff, Miss., to its force of field agents of the Department of Farm Improvement Work who are endeavoring to assist farmers of the Southeast to increase their average yields per acre.

Mr. Miller will have headquarters at Johnson City, and will devote his entire time to advising with farmers along the Virginia and Southwestern Railway, the main line of the Southern Railway from Bristol to and including Morristown, and the Embreeville branch of the Southern Railway, reducing to this extent the territory previously assigned to E. M. Anderson, field agent with headquarters at Knoxville.

Mr. Miller is splendidly equipped with scientific training and practical experience for this work, having graduated from the Starkville, Miss., A. & M. College, with a post-graduate course at Cornell. He did field work under Professor G. M. Warren, who is in charge of the farm improvement work at that college.

BENTON COUNTY CORN AND TOMATO CLUBS.

The recent exhibit of the Boys' Corn Club and the Girls' Tomato Club of Benton County, at Camden, was one of the most interesting events in the history of that county. The Boys' Corn Club exhibit was held under the supervision of County Superintendent M. L. Hardin, and the Girls' Tomato Club work was under the supervision of Mrs. M. L. Hardin. In speaking of the exhibits, Mr. Hardin said:

"It was the greatest thing Benton County ever had. There were thirty-six boys exhibiting 720 ears of corn and about eighty stalks of tall corn. Eight varieties and several cross varieties were represented in this exhibit. The highest yield reported was 115 bushels, with a second, seventy-eight bushels, and a third, seventy-three bushels. The tallest stalk exhibited was almost seventeen feet high, and on ten stalks shown by one boy were twenty-one well-developed ears and some others not developed.

"The total yield of the thirty-six boys exhibiting was a fraction over 1,688 bushels, an average of about 9 7-18 barrels per acre represented. This exceeds the average yield of the county a little over six barrels per acre. The total value of all the corn produced by the thirty-six boys is \$1,350.40, at 80 cents per bushel.

"This is in actual dollars and cents, considering only the thirty-six boys who exhibited corn. There were a number of others who

raised the acre of corn and some applied for entrance, but from one cause or another did not bring their corn.

"These thirty-six boys, growing corn in the old way, would have produced an average of three barrels per acre, or a total of 540 bushels, and this, at 80 cents per bushel, is worth \$432. A difference in bushels of 1,148, in dollars, \$918.40. Does the corn club pay?

"And while this is just dollars and cents, let's examine the educational side of the work. All these boys have read from one to ten bulletins and books on scientific agriculture; they have been taught to observe and learn the laws of nature; they have been taught reading, writing, arithmetic, geography, history, bookkeeping, art, and various other subjects too numerous to mention; they know something of the chemistry of soils and the physiology of plants; in short, they are now investigators as well as demonstrators, and what this means to the future progress of the country no one can estimate.

"I have tried only to present a few literal facts, and what can be reduced to cold, mathematical reasoning; the inspiration given these boys, the dozens of other boys who did not exhibit but raised the corn, the dignity given agriculture and the farmer, the hundreds of adult farmers who are studying and are going to practice improved farming next year.

"A man was heard to say, 'The corn show is worth ten thousand dollars to Benton County.'

"There is another phase of this work not a particle less than the boys' work in value, and that is the girls' work. Fourteen girls brought about one thousand cans of their products, representing the enormous number of 126 different varieties of canned goods. Thirty-four of this variety were made from tomatoes. One of the great canning concerns in the United States boasts fifty-seven varieties, while one great state boasts of ninety-six varieties in the entire state. How does this sound for a little county, its collaborator and its girls? The money value of the entire tomato crop is not so easily obtained as the corn crop on account of reports not all being available; but figures from a few crops might be interesting. One girl makes an itemized report and shows \$75 worth of products on one-tenth acre of tomatoes; another, \$65; another, \$50—\$750, \$650, \$500 on one acre of land! Farmers, can you beat it? And it's cold facts, because some of these girls have canned over 500 cans in three-pound tins, besides all the pickles, preserves, fresh tomatoes, soups, etc., that the family could use. The girls find a ready market for the tin cans at ten cents each.

"Those who visited the exhibit saw cook books prepared by the girls

themselves telling how to prepare tomatoes in over 400 different ways. These books showed thought not only along the line of scientific, sanitary cooking, but gave work in reading, writing, arithmetic, geography, physiology, chemistry, art and home-making. Think you that a girl who can and has made one of these books will be content to sit and idly dream away life in an aimless, lifeless, unhygienic sort of way? She has learned that in nature's bounty there is independence, beauty, and happiness for her, and that nature's God intends these things to be hers."

The following prizes were awarded:

BOYS' CORN CLUB.

Class A, for best acre of corn grown in Benton County—First prize, \$25 in gold, won by Lindell Crocker; second prize, \$15 suit, won by E. Bryan Warmack; third prize, \$10 in gold, won by Valgene Bridges; fourth prize, \$5 in gold, won by Jim Bridges; fifth prize, \$2 cash, won by Lieber Bivens; sixth prize, \$1 each to 31 boys exhibiting 10 ears of corn. This was given \$25 by the Farmers' Union and \$6 by private subscription.

Class B, for the best ten ears taken from the acre of club member—First prize, a pure-bred Duroc pig, won by Cutral Pafford; second prize, single-barrel shotgun, won by E. Bryan Warmack; third prize, a rocker, won by Zenas McKelvy; fourth prize, bridle and whip, won by Albert Walker, fifth prize, pair of shoes, won by Paul Corbitt; sixth prize, watch, won by Addlia Hollingsworth; seventh prize, Swann hat, won by Shafter Greer; eighth prize, riding bridle, won by Herman Cowell; ninth prize, Southdown sheep, won by Clifford Melton.

Class C, for the best written booklet on growing the acre of corn—First prize, one case of coffee, won by Cutral Pafford; second prize, single-barrel shotgun, won by Finis Melton; third prize, \$3.50 merchandise, won by Shafter Greer; fourth prize, pair shoes, won by Roy B. McEwen; fifth prize, watch fob, won by Albert Walker; sixth prize, \$2 merchandise, won by Luther Pafford.

Class D, for all members of the club making report and exhibiting ten ears—First prize, Corn Club emblem pin, awarded to thirty-six boys.

Class E, for ten tallest stalks, each containing one or more good ears—First prize, \$5 in gold, won by Cutral Pafford.

Class A, for best all-round showing on one-tenth acre of tomatoes—First prize, \$10 in gold, won by Miss Myrtle Hardin; second prize, \$7.50 cash, won by Miss Ruth Bailey; third prize, \$5 in gold, won by Miss Queen Cuff; fourth prize, \$3 cash, won by Miss Rubye DeVault;

fifth prize, three Barred Plymouth Rock chickens, won by Miss Mary Bell Cheatham; sixth prize, three Rhode Island Red chickens, won by Miss Cassie Herndon; seventh prize, \$3 hat, won by Miss Blanche Browning; eighth prize, \$2.50 parasol, won by Miss Verona Wright; ninth prize, two White Leghorn chickens, won by Miss Dora Capps; tenth prize, brush and box of stationery, won by Miss Myrtle Capps; eleventh prize, shirt waist, won by Miss Lillian Brooks; twelfth prize, shirt waist set, won by Miss Maud Pafford; thirteenth prize, pair silk gloves, won by Miss Eunice Hollingsworth; fourteenth prize, Camden Citizen, won by Miss Virgie Herndon.

Class B, for best book of tomato recipes—First prize, centerpiece, Hardinger embroidery, won by Myrtle Hardin; second prize, two Rhode Island Red chickens, won by Rubye DeVault; third prize, hatpin, won by Ruth Bailey; fourth prize, parasol, won by Queen Cuff; fifth prize, three-piece enamel set, won by Blanche Browning; sixth prize, \$1 cash, won by Lillian Brooks; seventh prize, Camden Chronicle, won by Cassie Herndon; eighth prize, coral necklace, won by Dora Capps; ninth prize, emerald brooch, won by Eunice Hollingsworth; tenth prize, enamel kettle, won by Mary Bell Cheatham; eleventh prize, Truck Farmer, won by Virgie Herndon.

Class C, for greatest variety of canned products of all sorts—First prize, three White Plymouth Rock chickens, won by Dora Capps; second prize, Truck Farmer, won by Myrtle Hardin.

Class D, for all girls exhibiting canned products and making report—First prize, tomato emblem pin, awarded to fourteen girls.

SHORT COURSE IN AGRICULTURE.

The short courses in agriculture conducted by the College of Agriculture of the University of Tennessee, to run from January 6 to March 1, inclusive, will afford opportunity for learning in these lines to thousands who would not otherwise be able to take a course in agriculture.

The courses in Agronomy and Animal Husbandry will run parallel through January, and the courses in Dairying and Horticulture will run parallel through February, the subjects alternating each day.

The instruction in the Short Courses in Agriculture is simple, direct and practical. As far as may be, the student learns by doing, and relatively little book study is required, although in every way possible the habit of reading is encouraged.

The full equipment of the College of Agriculture and of the Ex-

periment Station, including the farms and the library, will be available for the use of Short Course students.

Farmers' Week—The first week of the Short Course—January 6-11—will be devoted to practical farm products and their solution. The faculty of the Agricultural College will be assisted by distinguished lecturers; prominent breeders will exhibit the best individuals of their herds; successful men in every line of agriculture will assist with their experience. There will be opportunity for the widest discussion of every topic.

THE TURKEY BUZZARD AS A CARRIER AND TRANSMITTER OF ANIMAL DISEASES.

BY GEO. R. WHITE, M.D., V.S.,
State Live Stock Inspector.

Since the turkey buzzard is such a menace to the live stock industry of Tennessee—on account of being a disease carrier—it is well that our live stock raisers have their attention directed to this bird, particularly its habits and dangers.

The buzzard is one of our largest and most common birds. It is filthy and repulsive on account of being a scavenger. It is much more common in the Southern States than those to the north of us; however, it is occasionally observed as far north as Canada. It exists to a more or less degree in every state in the union. The buzzard is sluggish and lazy in its habits and has a decided preference for warm latitudes.

It is in Southern Alabama, Georgia, Florida and the West Indies that the buzzard finds life pleasantest. However, the buzzard breeds and thrives well in Tennessee. Here we find them present at all seasons of the year in great numbers.

It is molested by no other bird, since it attacks none. It makes no enemies, since it feeds almost entirely on carrion, which no other bird grudges. The youngest chickens in the yard show no alarm when a buzzard alights in their midst. They know from instinct that no more harmless bird to them exists.

The buzzard depends for protection entirely upon disgorgement of the foul carrion contents of its stomach upon the intruder. When disturbed in the act of devouring a foetid—especially when extremely hungry—they express great displeasure and blow through the nose, making a low, hissing sound or grunt, and lift their wings in a threat-

ening attitude. This hissing and grunting sound is the only noise a buzzard ever utters.

Since the buzzard feeds upon the carcasses of animals indiscriminately and are themselves endowed with natural immunity against most contagious infectious diseases, they are now considered carriers of all animal diseases which are of germ origin.

They carry the infection of black leg, anthrax, tuberculosis, hog cholera, glanders and many other diseases from place to place. This infection is carried upon the whole surface of their body, especially on the mouth and feet, as well as in their stomachs. All of the natural discharges from a buzzard's body are disease laden at all times, hence it behooves every owner of live stock to see that these disease carrying creatures are not allowed to light upon their premises.

Aside from public stock yards, I consider the turkey buzzard directly responsible for most of the outbreaks of hog cholera in Tennessee.

Many of the Southern states afford the buzzard legal protection. This accounts in part for their great numbers. At one time the buzzard was protected by law in Tennessee. At that time any one killing a buzzard was liable to arrest and fine. Of course when that law was passed no one had any idea that the buzzard was such a spreader of disease.

Some people are under the erroneous impression that the buzzard at this time has legal protection in Tennessee. For their benefit I will say that the law protecting the buzzard was repealed in 1903. Since that date the buzzard has had no legal protection in this state. Any person can kill a buzzard without violating any state law. Since that is a fact, every good citizen should do his part towards exterminating the buzzard, as it is a menace to the live stock raising industry in Tennessee, on account of being a spreader of hog cholera and many other contagious infectious diseases.

If all persons would make it a rule to bury all animals which die on the farm, then there would be no inducement offered the buzzard to visit their premises. Besides being an attraction to buzzards, the stench from foetid carcasses of large animals constitutes a public nuisance in any community where they are allowed to decompose on the surface of the ground. Some effort should be made to induce the incoming General Assembly to pass a law compelling owners to either burn or bury all carcasses of animals which die upon their premises. Such a law at this time is necessary from a human as well as an animal health viewpoint.

WINNER IN PRIZE ESSAY CONTEST.

Alton C. Greer, of Pikeville, has been declared the winner in the contest for the best essay on "What I Saw and Learned at the State Fair as a Member of the Farm Boys' Camp."

The prize is a free trip to Nashville to attend the Middle Tennessee Farmers' Institute, with all expenses paid for the three-days' session.

The contest was inaugurated by the State Fair management, and the committee which read the various essays and made the award is composed of M. W. Robinson, of the Department of Public Instruction; A. L. Garrison and T. G. Settle, of the Department of Agriculture.

The committee read the essays without knowing the names of the writers, and they agreed on the essay of Alton Greer.

ANNUAL MEETING OF STATE FAIR BOARD.

The Board of Trustees of the State Fair met at the Capitol Tuesday, Nov. 26, filled four vacancies on the board, reelected J. W. Russwurm Secretary, and heard a partial financial report on the last State Fair.

At the beginning of the meeting W. F. Barry, of Jackson, resigned as a member of the board in order to run for Secretary, and J. D. Johnson, of Jackson, was elected in his place. Sam N. Warren, President of the Middle Tennessee Farmers' Institute, was elected to succeed himself, as was Rob Roy, of Alexandria. W. B. Stokeley, of Dandridge, President of the East Tennessee Farmers' Institute, was elected to succeed W. R. Reeves, the former President, and R. T. DeBerry, of Humboldt, President of the West Tennessee Institute, was elected to succeed J. H. McDowell, the former President of the institute.

The financial report of the State Fair showed that while there was a slight deficit on the ledger, the fair was the most successful from every other standpoint of any yet held. The members of the board were of the opinion that, even though there was a slight loss, the financial showing was excellent because of the fact that on three days of the fair the weather conditions were very bad. One of these days was Nashville Day.

The board selected Emmett Cooper, of Nashville, one of the members to represent, with Secretary Russwurm, the board at the annual convention of the American Association of Fairs and Expositions to be held December 2-3 at Chicago.

FINAL CAMPAIGN AGAINST THE TICK.

The work of Texas fever tick eradication this year in the ten counties and parts of counties which are yet under quarantine has progressed entirely satisfactorily to the State and Federal Government officials. More work has been done and better results accomplished during 1912 than ever before in the history of the campaign against the ticks.

From present indications not less than 3,000 square miles of Tennessee territory will be freed of ticks and released from quarantine this year. Dr. G. R. White, State Live Stock Inspector, has laid off three of his assistants who have been engaged in this class of work during the past spring, summer and fall. The counties involved will retain the services of a reduced number of inspectors to supervise the movement of cattle during the winter months. Next spring the Federal Government and State will begin their final campaign against the cattle tick, and those in authority predict that the whole State of Tennessee will be above the Federal quarantine line by the end of the year 1913, in which event it is conservatively estimated that it will mean at least an additional \$5,000,000 annually in the pockets of the cattle owners and raisers of this State.

TENNESSEE EXHIBIT IN MICHIGAN.

The splendid results which followed the tour of the State exhibits through the Northwest some months ago has inspired the Department of Agriculture to further efforts along the line of interesting homeseekers in the vast resources of the State, and Capt. T. F. Peck and his assistants are busy packing a new exhibit, which will be sent to Michigan.

The advance shipment of this exhibit, showing the agricultural advantages offered in Tennessee, will be in charge of J. J. B. Johnson. Samples of crops and various figures on the yield, cost of land, advantages of dairying, etc., will be told not only by Mr. Johnson, but in addition to the exhibit there will be many pamphlets and circulars distributed to the prospective homeseekers in the North in an effort to induce them to locate in the Volunteer State.

According to the men who engineered the first tour, there are many substantial farmers in the North and Northwest who are anxious to escape the long, hard winters, but they don't know what Tennessee has to offer, and unless they are shown they go elsewhere.

Tennessee's resources, her advantages in various lines, particularly agriculture, the general soil fertility and splendid climate appeal to the farmers who are anxious to make a change, and these tours are

bringing results that mean much for the State, particularly in agricultural lines and in dairying.

Commissioner Peck will, before the end of the year, have published and ready for distribution a new map of Tennessee, or rather two maps. One will show the counties in colors, the railroads, public roads, streams, cities, etc., and the other will be a soil map, showing the soils, minerals, phosphates, etc., with cross-sections giving elevation, etc., of different sections. There will also be graphics showing crops. A detailed description of the State by counties will be printed on the reverse side.

The new maps will supply information equally as valuable to the resident citizen as to the homeseeker and investor, and there will doubtless be a big demand for the maps as soon as they are ready for distribution.

AVAILABLE SUPPLY OF CORN.

Counting the amount of corn carried over at 70,000,000 bushels the supply available at this date is 3,308,000,000 bushels, against 2,652,000,000 in 1911. The present supply is 312,000,000 bushels in excess of any supply ever known in the history of the Chicago Board of Trade. The previous high record in the seven surplus states was 1,689,000,000 bushels in 1910, but is now placed at 1,910,000,000 bushels. These seven states are Ohio, Indiana, Illinois, Iowa, Missouri, Kansas and Nebraska.

The present weather is ideal for the curing of the corn crop, and it is being husked and the movement will increase from day to day from this time forward.

With the closing of October came a readjustment of prices of corn to very nearly the new crop basis all around. Those who had expected a squeeze in October delivery prices and had bought that delivery in anticipation of it had the actual corn delivered to them and are now nursing some very substantial losses. The merchandising demand went flat, the consumer evidently hiding off in anticipation of getting new corn much cheaper. The weather has been so good that his anticipations have been entirely realized.

Some think that December will go out below 50c. despite the fact that there are holdings by large interest, estimated at over 8,000,000 bushels. It would not be possible to deliver 8,000,000 bushels contract corn in December because the new corn contains too much moisture. At the same time with the anti-corner rule extensive manipulation is prevented.—*Chicago Report in Wall Street Journal.*

PERCHERON BREEDING IN THE UNITED STATES.

*By Wayne Dinsmore, Secretary Percheron Society of America,
Chicago, Ill.*

Slowly, but surely, the Percheron breeders in the United States are following the trail laid out by American cattle breeders. Shorthorn, Hereford and Angus breeders have brought their breeds to a position in numbers and excellence unexcelled in the world. Slight progress was made in cattle breeding until the number bred in this country made selection possible; and the most rapid progress came after the breeds were well distributed and pure-bred animals had become fairly easy to locate in the chief breeding districts.

In the past the breeding of Percherons of the best possible type has been retarded because of the limited number of breeding animals from which selection could be made. The fact that the available animals were widely scattered over a vast area of territory still further handicapped the work of constructive breeders. Selection and assembling of the best females was impossible.

These conditions still prevail in some degree, but much less than formerly. An analysis of the registrations of American-bred animals made between August 1, 1910, and May 1, 1912, has recently been completed by the Percheron Society of America. This covers most of the colts foaled in 1909 and 1910, some over-age animals and a few 1911 colts.

While it does not represent two full years' registrations, it does give a very definite line on the distribution of Percheron mares and the location and relative importance of various breeding districts.

The accompanying map shows at a glance the wide distribution of the breed and the pre-eminence of Illinois and Iowa as breeding districts. These two states contributed 50 per cent of the Percherons recorded.

Ohio, Kansas, Nebraska and Indiana are the states next in line, and together bred 22.8 per cent of the animals recorded in the time mentioned. Minnesota and Wisconsin follow closely, and Missouri takes an unexpectedly high rank, standing ninth. This is due to the rapid development of draft horse breeding in the northern half of the state, where conditions are very similar to those prevailing in the big six, or the corn belt states.

The judgment of the most experienced buyers of draft horses for market purposes is to the effect that more good draft horses can be purchased in Iowa and Illinois than anywhere else in the United States. This is undoubtedly due to the fact that these states are older in draft

horse breeding than any others save Ohio. All experienced horsemen concede that the distribution of a number of pure-bred mares of any draft breed in a locality results in hastening the introduction of better sires, for the owners of pure-bred mares insist upon a first-class sire of the breed they are using. In numerous instances where stallion owners have declined to purchase better horses they have of their own accord gone out and purchased good stallions, thereby forcing the local stallioners into the purchase of better sires.

The three leading states are those oldest in draft horse breeding. Ohio was earliest with Percheron importations in 1851, but Illinois breeders purchased the greatest of the early sires—Louis Napoleon—in 1856, and between that time and 1880 imported many times more Percherons than Ohio. Iowa breeders started with the breed almost as soon as their collaborators in Illinois, and, like Illinois, established a greater number of breeding centers than Ohio prior to 1880. From these three states, pioneers in draft horse breeding, the spread has been gradual into adjoining states. It is a matter of surprise that Indiana, lying midway between Illinois and Ohio, should have made less progress in recent years than Kansas and Nebraska.

Within the leading states the breeding is centered chiefly in 10 or twelve counties. Illinois is breeding Percherons in 80 out of the total of 102 counties; Iowa, in 96 out of 99; Ohio, in 70 out of 87; Kansas, in 72 out of 105; Nebraska, in 53 out of 92; Indiana, in 67 out of 92.

Illinois and Iowa, the leading states, stand in marked contrast in one particular. Most of the Percherons in Illinois are bunched in relatively few counties, while in Iowa they are distributed over practically the entire state. No county contributed over 7.2 per cent of those bred in Iowa, while in Illinois the leading county, McLean, furnished 15.8 per cent of all those bred in the state in the time considered. The first six counties in Illinois furnished 45 per cent of all bred in the state; the first six counties in Iowa but 35 per cent.

The wide distribution of Percheron mares, already shown, means a more general demand for the best Percheron sires. The number of men who own and are breeding Percherons, now in excess of 6,000 active breeders, will inevitably hasten the production of better Percherons than have heretofore been bred in America. American farmers are excelled by none in the world in intelligence and skill in their live stock breeding operations, and the work of so many keen minds cannot fail to bring a wonderful improvement in the breed

within the next few years. Careful selection of the best is now possible, although difficulty will still be encountered on account of the area which must be covered in making selections.

Success in breeding live stock is hard to win. This is particularly true in horse breeding. The development of Percheron breeding in the United States has been hampered by enemies of the breed, by division in the ranks of its supporters, and by much hostile criticism from would-be authorities on breeding problems. These are incidents, history teaches us, in the development of every great breed of live stock, and the steadiness and cool judgment displayed by Percheron breeders in surmounting all such difficulties have probably never been excelled under similar circumstances. Percherons are today the most popular breed of draft horses in the world and far outnumber all the other pure-bred draft horses in the United States. There has never been a time when the industry was on a firmer foundation, nor a better time for creative breeders to devote their best efforts to the development of better Percherons than the world has yet produced.

Note.—Since the time has come when deep plowing and deep tillage is necessary in Tennessee in order to reclaim and conserve our soil, the breeding of horses of the draft or heavy type should appeal with special emphasis at this time to our farmers and live stock breeders. It is as impossible to practice deep tillage with light-weight farm animals as it is to pull a modern 75 or 85-car freight train with the light locomotive as formerly. If we pull the modern freight train of today successfully, we must have a mogul engine. If we plow deep we must have draft animals for farm purposes; and, in our opinion, there is no animal of the draft type which excels the Percheron for this section. Hence I have no hesitation in commending the above article to the readers of Tennessee Agriculture.

G. R. WHITE,
State Live Stock Inspector.

AGRICULTURAL WEALTH.

Official estimates of the Department of Agriculture are that the total of agricultural wealth to be produced in the United States this year, including the crops, stock raising and dairying, will be \$9,000,000,000, a half billion dollars more than last year. The capital stock of all the railroads of the United States is but \$8,470,000,000, less by a considerable sum than the amount the farmers of America will get for their products this year.

BANKERS INTERESTED IN AGRICULTURE.

Mr. A. R. Dodson, Cashier of the Merchants State Bank, and Chairman of the Committee of the Tennessee Bankers' Association, and also Chairman of the Gibson County Committee of the same organization, called the bankers of Gibson County together at Humboldt for the purpose of discussing plans for the betterment of agricultural conditions—the conservation of soils and the producing of larger and better crops by our farmers.

The following bankers and other gentlemen of allied interests were present, and were entertained with a delightful six o'clock dinner at the hospitable home of Mr. Dodson: Mr. Fred Collins, Mr. J. R. Harrison, J. D. Denney, Milan; R. N. James, Gibson; Luther Porter, Rutherford; C. O. Ewell, J. H. McDearmon, Dyer; A. S. Elder, Trenton; J. H. Thomas, A. R. Dodson, J. T. Harder, Geo. McDearmon, T. Q. Warmath, J. R. Jarrell, Humboldt.

The dinner was a delightful affair, under the hostess-ship of Mrs. Dodson, and was greatly enjoyed by the gentlemen present.

Mr. H. S. Nichols, of the United States Agricultural Demonstration work, was present and addressed the bankers at the meeting which followed the dinner.

Several of the visitors made talks, and Mr. Dodson, who is showing the liveliest interest in progressive farming, made a talk of much interest.

Under Mr. Dodson's leadership, the bankers of Tennessee are ably seconding the work of the Government in promulgating the doctrine of better methods in farm work, and much good is undoubtedly going to be accomplished.

Other meetings are going to follow, and a campaign is going to be steadily made for a betterment in agricultural conditions, which, it is believed, will result in great good to the farmers.—*Humboldt Courier-Chronicle*.

With the increasing population of the country there is little chance of a permanent depression in wheat prices in the future, and there is every reason why farmers who have land that is suited to wheat growing should take up its culture.

The three sizes of roasting fowls—small, medium and large—can best be secured by the Wyandottes, Plymouth Rocks and Brahmas, respectively. The Rhode Island Reds can be substituted for the Plymouth Rocks if desired.

DEAD WEALTH OF THE FARMER.

How often we hear the farmer say, "Of what value are increasing land prices to me; I cannot get the money unless I sell my farm and then I should have no use for it!" And what is truer than that? Many of our farmers are wealthy, and yet when they need money with which to make needed improvements they cannot get it. The local banker talks about money being scarce, still he may have \$100,000 on deposit, every penny of which came from the farming country surrounding his place of business. There is something wrong when a farmer whose net worth is anywhere from \$10,000 and \$50,000 is refused a few thousand dollars on his note, especially when he would have no difficulty in showing his banker that the use to which he wishes to put the money would be profitable and the investment absolutely safe and sound. But the banker claims to be powerless to aid the farmer, and that ends the matter. The farmer has no recourse. The intended investment cannot be made, and the profits that would have been secured therefrom are forever lost. What effect will such practice have upon a farm community through a period of ten or twenty years? Can you compute it?

Did you read what one of our correspondents said in a recent issue of *Farmer and Breeder*? We will reprint two sentences from his letter: "Last fall I wanted to borrow \$300 of my bank to buy some of the cheap cattle that shippers were sending out of my section of country. My plan was to build a silo, carry the cattle through the winter on cornstalks, silage and straw. At the prices cattle were selling for at that time I could have cleared enough on twenty-five head to have paid for a 100-ton silo." The banker refused him the loan of that paltry \$300. In what way are bankers of that kind benefiting the country? Is it not a fact that they are actually working against the farmers as well as against their own welfare? The country banker is supposed to be the shrewdest business man in his community, but is he? Bankers who are as short-sighted as the one referred to are evidently actually a detriment to the section from which they get their support.

Let us see what this banker actually did to this man. First, the farmer was kept from earning a silo last year. This year the silo would have been paid for and would have enabled the farmer in question to have earned from \$200 to \$300 more net cash from his year's farming by reason of having a silo. The silo would enable him to get nearly double the value of at least a part of his corn crop. By a little planning this 100-ton silo could actually be filled three times this season and thus provide against a possible drouth next summer.

This extra money might then be put into another silo or into tile draining some low place on his farm and thus perhaps double the producing value of twenty to fifty acres of land. Figure ahead what such improvements would mean in the course of ten years and you will get some idea of the harm this banker did in not lending this progressive farmer—perhaps a tenth of what he was justly entitled to—the small sum of \$300. Is it any wonder that farmers often seem slow in making improvements and developing their farms to a more profitable plane?

What can be done about it? Let the farmers help themselves. Let them form cooperative finance associations and do their own financing. Is this practicable? Let us see. The two banks in the town of our correspondent have \$250,000 of farmers' money on deposit, most of which has possibly been sent East to work for manufacturers and merchants. Suppose a farmers' cooperative finance association had had that money to handle themselves under proper government regulation, they would have lent it to members of their own association who might be in position to handle the money to good advantage. These savings deposits would thus be put to work at home, building up the country in which they originated instead of being sent East—perhaps to Wall Street, to be used to depreciate the price of the farmer's honestly earned products.

This is not an impracticable theory. It is what European farmers have been doing for many years. In Germany alone rural cooperative credit associations annually do a business of over five billion dollars. Can not the American rural population do as well as the German farmers? Surely no American would say "no."

These are questions farmers should talk over among themselves. They are of vital importance. They are even of greater importance than crop improvement. It is necessary that we should pay attention to the conservation of soil fertility, to sowing better seed, and to working our soils more thoroughly, but all these good things to a large extent lose their force when the needed money for carrying them into effect cannot be secured. A better rural credit is badly needed in this country. Let us hear from those of our readers who have had difficulty in getting loans to which their financial standing entitled them. It is time for the farmers to speak out. It is time for them to have some real battles with their bankers, if need be. They can no longer manage their high-priced land without some capital. When farmers whose property is worth from \$20,000 to \$30,000 cannot get the credit from their bankers to which they are justly entitled, let them find ways and means of taking care of their own financial needs.

Should they start a movement of that kind the country bankers would soon wake up and do something, but unless they awaken in the very near future they may be too late.

So long as the farmer's wealth remains dead so far as he is concerned—inactive—just so long will he be unable to live up to his opportunities. Make his dollar an active dollar and the farmer will prosper, and when he prospers everybody else will be prosperous.—*Farmer and Breeder.*

HANDLING VICIOUS BULLS.

We suppose every one has a recipe for the treatment of these very troublesome fellows, but it will not hurt to say something from the standpoint of Hoard's Dairyman.

In the first place, bulls get unruly largely because of the superabundant energy that is wrapped up in them. They ought to be made to work every day on a tread power or in some other way and get real tired. That will do more to repress their "masculine rage" than any thing we know of.

Second, if a young bull gets the notion in his head that he is boss, take him out on the meadow or where the snow is deep enough to make a fair cushion and throw him with a double loop a few times. That will put more sense of his inferiority in the hands of man into his thick head than anything we ever tried. The double loop is made in the following manner: Take a half-inch rope, say, twenty feet long. Pass one end through the nose ring, leaving about six feet in front, thence up between the horns. Then pass the rope around the body just back of the fore legs and make a half hitch at the backbone, thence back to the hips, making another turn around the body just in front of the hind legs with a half hitch at the backbone and carry out the rope over the tail six or eight feet in the rear.

Let two men take hold of the end in front and two more on the rope in the rear and give a stout pull together, when down goes Mr. Bull as if he was shot. Hold him down by the head a few moments and let him up. Likely enough he will make a lunge at the men in front, but another slow pull brings him to his side with a bang. Throw him two or three times in this way and it will take the conceit out of him wonderfully. You have not struck him nor hurt him, nor is his anger aroused. He is simply nonplussed and completely beat at your power over him.

We have known of several very cantankerous bulls who were kept quite decent by an occasional dose of the double loop.

NOVEMBER CROP REPORT.

**T. F. Peck, Commissioner, Department of Agriculture,
Nashville, Tenn., December 1, 1912.**

According to reports from crop correspondents in eighty-three of the ninety-six counties of the State, the average yield of corn in Tennessee for the crop year 1912 will be 35.5 bushels per acre, exceeding the estimated yield per acre in 1911 2.5 per acre.

If the estimates of our crop reporters are correct, the corn crop has proved better than was expected. On account of a decrease in acreage from last year, the total yield will not equal the 1911 crop.

The reports indicate a decrease in the acreage in winter wheat, and an increase in the acreage in oats and rye.

A marked decrease is shown by the reports in the yield of cotton per acre, and also a considerable decrease in the yield of tobacco from last year.

The condition of live stock compares well with November of last year, but is hardly as good as shown in the October report. Hog cholera is still prevalent in many sections of the State, and has caused large losses to the farmers.

This is the last crop report for the year 1912. The next crop report will be issued in March, 1913.

Below is the summary for comparison of the crop reports of this department for November for the years 1911 and 1912:

	1911.	1912.
Wheat, acreage sown, per cent.....	78	72
Winter oats, acreage sown, per cent.....	72	77
Rye, acreage sown, per cent.....	71	73
Corn, bushels per acre.....	33	35.5
Cotton, pounds per acre.....	670	519
Millet seed, threshed, per cent.....	63	72
Stock peas seed, threshed, per cent	70	65
Sweet potatoes, yield, per cent.....	80	78
Late Irish potatoes, yield, per cent.....	60	73
Tobacco, pounds per acre.....	766	657
Broom corn, yield, per cent.....	80	67
Peanuts, bushels per acre.....	68	59
Live stock, condition, per cent.....	87	89
Young clover, condition, per cent.....	66	88
Alfalfa, condition, per cent.....	70	88

NOVEMBER CROP REPORT FOR 1912—T. F. PECK, Commissioner of Agriculture

DISTRICT	COUNTY	Wheat—acre— age sown.	Winter Oats— acreage sown.	Rye—acre— age sown.	Corn—bushels.	Cotton—pounds.	Millet Seed— threshed.	Stock Peas Seed —threshed.	Sweet Potatoes —yield	Late Irish Po- tatoes—yield.	Tobacco— pounds.	Broom Corn— per cent.	Peanuts— bushels.	Live Stock— condition.	Young Clover— condition.	Alfalfa— condition.
A Alluvial Plain of the Mississippi River and Plateau Slope of West Tennessee.	Lake	90	80	90	30 800	...	...	60	80	85	600	...	...	90	85	90
	Obion	...	...	70	30 600	...	...	...	70	80	...	...	...	60	100	100
	Dyer	...	...	...	...	...	...	75	95	50	...	...	...	97	100	...
	Lauderdale	93	100	25	575	...	...	50	87	90	...	...	30	95	95	100
	Tipton	90	75	100	27 775	...	...	...	...	...	...	...	...	...	...	...
B Brown Loam Table- lands, Middle Counties of West Tennessee.	Shelby	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Weakley	80	62	70	26 700	...	...	62	83	42	800	60	...	88	78	...
	Gibson	85	90	80	15 300	...	...	60	85	90	...	50	50	90	85	95
	Crockett	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Madison	90	100	80	34 410	...	...	70	100	100	597	100	...	95	100	...
C Summit Region of Watershed, West Ten- nessee.	Haywood	...	...	100	20 466	...	...	62	56	75	...	...	...	85	100	100
	Hardeman	70	60	55	16 475	...	...	77	95	100	...	50	7	85	100	100
	Fayette	76	95	67	14 466	...	...	85	91	78	...	...	...	98	100	...
	Henry	90	...	...	25 400	...	...	82	...	...	650	...	...	92	85	...
	Carroll	100	100	50	27 450	...	51	40	80	100	900	100	40	97	87	...
D Valley of Tennessee River, West and Mid- dle Tennessee.	Henderson	40	27	33	9 400	...	30	30	75	40	...	...	60	77	77	65
	Chester	100	100	87	12 350	...	75	...	...	...	...	...	...	97	80	...
	McNairy	50	60	30	35 406	...	...	46	65	71	...	...	75	86	50	100
	Stewart	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Benton	45	80	55	34 400	...	...	45	90	60	...	...	70	95	12	...
	Houston	92	91	90	43	...	...	66	76	53	800	...	60	91	80	85
	Humphreys	70	65	80	33	...	...	60	70	75	500	...	35	92	85	60
	Decatur	...	...	18	250	...	...	13	69	...	...	...	35	85	...	...
	Perry	100	100	96	26 200	...	...	70	60	72	...	...	46	92	95	...
	Hardin	50	50	50	65	...	40	75	...	...	...	...	83	50	...	...

NOVEMBER CROP REPORT FOR 1912—T. F. PECK, Commissioner of Agriculture

DISTRICT	COUNTY	Wheat—acre- age sown.	Winter Oats— acres sown.	Rye—acre-	Corn—bushels.	Cotton—pounds.	Millet Seed— threshed.	Stock Peas Seed —threshed.	Sweet Potatoes —yield	Late Irish Po- tatoes—yield.	Tobacco— pounds.	Broom Corn— per cent.	Peanuts— bushels.	Live Stock— condition.	Young Clover— condition.	Alfalfa— condition.
E Highland Rim of Mid- dle Tennessee. West- ern Subdivision.	Montgomery	100	100	83	25	...	...	...	70	70	650	...	...	85	90	...
	Robertson	100	65	83	46	...	...	...	75	75	766	...	...	85	95	...
	Cheatham	87	70	80	42	...	...	...	65	65	750	...	...	95	95	...
	Dickson	90	50	50	35	...	50	90	100	100	800	...	50	100	100	...
	Hickman	85	73	75	42	600	58	45	83	71	550	58	31	83	83	80
	Lewis	100	75	75	42	...	...	60	75	75	...	...	85	100	80	...
	Wayne	...	...	...	30	725	...	...	25	40	...	...	25	100	100	...
	Lawrence	100	87	95	25	...	...	37	62	100	...	...	...	100	100	...
	Macon	85	...	...	90	90	90	75	85	...	900	...	...	100	90	...
	Clay	82	...	90	52	...	...	72	92	100	...	...	...	87	87	...
I Highland Rim of Mid- dle Tennessee, Eastern Subdivision.	Pickett	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Overton	91	96	95	26	...	92	88	95	82	...	...	...	95	95	...
	Jackson	83	80	76	71	...	...	65	83	80	700	85	...	92	76	...
	Putnam	88	80	88	45	...	100	61	98	95	675	...	...	42	72	...
	DeKalb	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	White	95	95	90	29	...	100	92	90	85	800	...	85	92	85	95
	Warren	92	100	82	36	...	75	82	...	...	...	...	...	95	90	80
	Warren	92	100	82	36	...	75	82	...	...	...	...	...	95	90	80
	Coffee	75	66	63	26	...	60	80	...	...	750	...	...	91	91	95
	Franklin	96	83	...	55	...	...	...	70	...	...	...	...	93	91	95
G Central Basin.	Sumner	89	70	52	36	...	80	75	86	71	825	...	...	91	93	85
	Trousdale	80	75	...	30	...	...	...	...	...	...	...	...	...	100	90
	Smith	91	60	88	45	...	62	65	61	71	750	75	50	98	100	...
	Davidson	62	55	50	37	...	60	50	80	80	...	...	...	90	80	62
	Wilson	87	...	45	27	...	...	50	65	80	...	...	...	100	100	...
	Williamson	77	65	55	28	550	65	45	85	52	...	...	...	92	85	...
	Rutherford	80	...	...	35	...	100	45	75	75	...	...	...	90	80	...
	Cannon	70	30	50	40	...	45	45	60	45	...	40	...	75	70	...
	Mauzy	100	100	90	47	...	...	75	65	73	...	75	...	88	65	...
	Marshall	85	15	25	30	600	50	32	57	20	...	75	...	87	97	...
Bedford	76	55	70	34	600	...	40	73	33	...	...	...	88	90	60	
Giles	72	15	100	67	675	...	20	50	10	400	...	70	100	100	...	
Lincoln	85	...	90	20	...	60	50	50	87	...	...	...	95	90	95	
Moore	60	100	73	43	...	90	70	70	87	85	...	...	100	100	...	

H Cumberland land.	Scott Pentress Morgan Cumberland Van Buren Grundy	80 61 100	80 57 100	24 19 80	80 51 100	86 80 100	80 77 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 100	80 86 1
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NOTICE TO NEWSPAPER PUBLISHERS.

Several thousand copies of *Tennessee Agriculture* will be issued each month, but not enough, on account of limited appropriations for this work, to give it as wide circulation as desired. Therefore the Department of Agriculture asks the cooperation of the newspapers of the State in their liberal use of any or all the matter in the bulletins.

PUBLICATIONS OF DEPARTMENT OF AGRICULTURE.

The following publications have been issued by the Department of Agriculture and will be sent, until supply is exhausted, when request is accompanied by necessary postage:

Tennessee Agriculture. (Monthly Bulletin.) Vol. 1, No. 1. 32 pages.

Vol. 1, No. 2. 48 pages. Issued June 1, 1912. 2 cents.

Facts About Tennessee. Issued December, 1911. 52 pages. 2 cents.

Map of Tennessee. Showing Agricultural and Mineral Resources, Population and Educational Statistics, with Description of Counties. Issued 1912. 2 cents.

Handbook of Agricultural Laws of Tennessee. Issued October, 1911. 68 pages. 2 cents.

Tabulated Analyses of Commercial Fertilizers. Issued January, 1912. 50 pages. 2 cents.

Seed Bulletin. No. 1. Issued March, 1912. 18 pages. 1 cent.

Proceedings Tenth Annual Session Middle Tennessee Farmers' Institute. Dec. 5-7, 1911. 160 pages. 5 cents.

Laws and Rules and Regulations Governing Live Stock Sanitary Control Work in Tennessee. Issued April, 1912. 32 pages. 2 cents.

Relation of the County Health Officer to the State Department of Agriculture. By George R. White, M.D., D.V.S. 12 pages. 1 cent.

Concentrated Commercial Feeding Stuffs. Bulletin No. 2. May 15, 1911. 96 pages. 2 cents.

Biennial Report Tennessee Department of Agriculture. 1909-1910. 392 pages. 10 cents.

Biennial Report Tennessee Department of Agriculture. 1907-1908. 250 pages. 8 cents.

Proceedings Thirteenth Annual Convention Association of Agricultural Workers of the South, at Nashville, Dec. 11-13, 1911. 58 pages. 2 cents.

Davidson County, Tennessee. Descriptive booklet. 32 pages. 2 cents.

Rhea County, Tennessee. Descriptive Booklet. 32 pages. 2 cents.

Scott County, Tennessee. Descriptive Booklet. 32 pages. 1 cent.

Warren County, Tennessee. Descriptive Booklet. 16 pages. 1 cent.

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IN THIS ISSUE:

PROCEEDINGS

— OF —

Middle Tennessee Farmers' Institute
and Home-Makers Association

Nashville, Tenn.

December 3-4-5, 1912.



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Agricultural Interests of Tennessee

Published Monthly at Nashville by
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THOMAS F. PECK, Commissioner

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JANUARY 1, 1913.

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DR. GEORGE R. WHITE, State Live Stock Inspector.
SAMUEL E. REYNOLDS, Assistant Commissioner for East Tennessee.
JESSE TOMLINSON, Assistant Commissioner for Middle Tennessee.
R. T. DEBERRY, Assistant Commissioner for West Tennessee.
J. W. WYNN, Feed and Seed Inspector for East Tennessee.
NOBLE C. WHITE, Feed and Seed Inspector for Middle Tennessee.
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**MIDDLE TENNESSEE FARMERS' INSTITUTE,
Nashville, Tennessee.**

ELEVENTH ANNUAL SESSION.

FIRST DAY—TUESDAY, DECEMBER 3, 1912.

MORNING SESSION.

The Middle Tennessee Farmers' Institute met in the Hall of Representatives at the State Capitol, at 10 o'clock, Tuesday morning, December 3, 1912, in its eleventh annual convention, with about 800 delegates present at the opening session.

The convention was called to order by President Sam N. Warren, of Spring Hill. The invocation was offered by Dr. Carey Morgan, of the Vine Street Christian Church.

In calling the convention to order, President Warren expressed regret that, owing to illness, Gov. Ben. W. Hooper could not be present, as scheduled, to deliver the address of welcome. Mr. Charles C. Gilbert, of the Nashville Board of Trade, was called on to take the place of Gov. Hooper on the program, and in his address extended a hearty welcome to the members of the Institute.

He spoke of the importance of good roads, and the Boys' Corn Clubs, and predicted that the day was coming when a country boy of Tennessee would be crowned king of corn growers. His address follows:

WELCOME ADDRESS.

Mr. President and Members of the Middle Tennessee Farmers' Institute:



I consider it a very great pleasure to be privileged to extend to you a word of welcome, and in welcoming you on behalf of the Chief Executive of the State of Tennessee, I consider it a greater privilege. I know I but voice the sentiment of every one present when I say Governor Hooper's absence is regretted, and knowing him as I do, I know he regrets his inability to meet with you and extend a welcome as only he is capable of extending. Governor Hooper is truly the farmer's friend, as evidenced by his every act since becoming Governor of this State, and his being ill is the reason he is not with you today.

Not only do I desire to extend you a word of welcome on behalf of the Governor, but I want to welcome you to Nashville on behalf of the Board of Trade. This organization, composed of eighteen hundred business and professional men, is intensely interested in the welfare of the farmer. The Agricultural Committee of the Board of Trade is doing a splendid work towards the advancement of practical farming, the growing of live stock, the conservation of the soil, the growing of fruits and berries.

We are glad that such a large number of farmers throughout Middle Tennessee are interested in these things to the extent that they can come together in an institute of this kind and get information and inspiration along all lines of modern farming. The people living in the city want to see the farmers prosperous, for upon their success depends the condition of the country. When the farmer can boast of his field of waving grain and his barns and storehouses full to overflow, then can it be said that "times are good," but until then there is an unrest everywhere.

The Nashville Board of Trade is interested in the Boys' Corn Club movement throughout Tennessee, and through its Agricultural Committee was instrumental in raising the money, both last year and this, which was offered as cash prizes. The future of our State is in the hands of the boys, and if we can make of them better farmers to the extent that they will make "two ears of corn grow where one formerly grew," we will not have labored in vain.

We of the city are proud of the farmers of Middle Tennessee. We are glad to have you attend this institute, and we trust your stay in Nashville will be both pleasant and profitable.

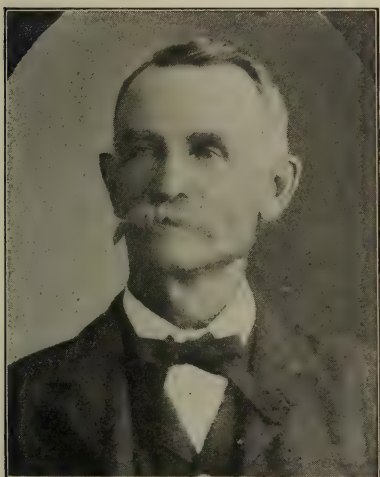
In response to the address of welcome of Mr. Gilbert, Mr. J. N. Meroney, of Dark's Mill, made the address on behalf of the delegates. He commended Gov. Hooper in his appointment of Capt. T. F. Peck as the head of the Agricultural Department, and spoke of the great interest manifested by the Governor in the agricultural affairs of the State.

Mr. Meroney also spoke of the far-reaching effect of the Boys' Corn Club movement, and said that through the example set by these boys he expected to see Tennessee's corn crop more than doubled.

The address of Mr. Meroney follows:

RESPONSE.

Mr. President, Ladies and Gentlemen:



It gives me great pleasure to speak for this intelligent assembly of Tennessee farmers, in response to the kind and courteous welcome that our Governor and the Nashville Board of Trade have given this convention.

I know I voice the sentiments of this great body of Tennessee farmers when I say that we do most highly appreciate the interest that Governor Hooper has taken in the improvement of Tennessee agriculture. His selection of the officials of the Department of Agriculture has certainly proved a success. Capt. Peck, as the Commissioner, Dr. White, as the Live Stock Inspector,

and Mr. Garrison, as Feed and Seed Inspector, have done their duty, have given satisfaction to the people, and are a credit to his administration.

Perhaps some of us, for reasons of our own, may have opposed him in the recent election, as any man had an undisputed right to do, but now when the people have spoken and the majority have said that he shall be our Governor for another term, he will find the farmers as a class lining up behind him to hold up his hands, sustaining and supporting him in all his honest efforts in the direction of good government, law enforcement and upholding the honor and good name of our beloved State.

The Tennessee farmers are not infidels; they believe there is a just God who rules over the destinies of men. They are not anarchists; they have a strong and abiding faith in Tennessee manhood to sustain and support good government.

We wish to commend the earnest and constant efforts of our official Commissioner of Agriculture, Capt. T. F. Peck, to interest the farmers

all over our State in improved methods of agriculture, in growing more and better live stock on the farm, in the best methods of sustaining and increasing the fertility of our soils, and while he may not yet see satisfactory results blessing his efforts, we old farmers who are among the people do see and know that much improvement is showing in many sections of our State. We know our people are being benefited. We hope he will not become discouraged but continue the good work.

And again we desire to compliment the railroads of our State for their interest, so often shown in advancing the cause of improved agriculture. It is through their liberality that we have met here on this occasion. The Middle Tennessee Farmers' Institute meets annually in this city. There should be present in this assembly representative farmers from forty-one counties of our State, all of them furnished free railroad transportation to this meeting, to enable them to learn of all the new methods of agriculture and the latest scientific discoveries of our experiment stations, on all the perplexing problems of farm life. The liberality of the railroads enables us farmers to take advantage of these splendid opportunities.

But my friends, it is not from motives of charity or special love for the farmer that influences the management of the great railroads to do this. The directors of these great transportation companies are men of large business experience. They are what we call "men of affairs," and they are planning for future benefit to their roads. They know that if the farmers become educated to improved methods of farming they will grow more produce and more live stock on their farms. These increased products of the farm must be transported to market, and their freight revenues will be increased thereby.

Now, my farmer friends, this is a lesson for us to study. If these far-seeing business men can find so much benefit to come to the railroads from a better system of agriculture, why is it not more to our interest? We will surely be the first to get the advantage. The returns for the increased products are ours—the charges for conveyance to market only are theirs. So we see this is not a charitable impulse, but a far-seeing, well planned business proposition.

Now, gentlemen, we are here to learn all we can that will help us in our life work. New problems are rising before us every year, new insect enemies, new fungus pests, new diseases of plants and animals develop that call for much scientific study and careful experiment. We cannot do this, but our experiment station does it for us, and brings us the results to put in practice. Let us make good use of them. Let us learn to sustain or increase the productive power of our farms by deeper tillage, the proper use of manures and fertilizers, the use of nitrogenous green crops, the storage of the rains of winter so that we need not fear the drouths of summer, the economical feeding of our live stock.

By paying heed to these teachings we can double the yield of our crops and at the same time improve the producing capacity of our land.

The recent surprising results of the Boys' Corn Club work should teach us a valuable lesson. The average yield of corn per acre in our State has never but once reached twenty-six bushels, but a boy only thirteen years old in my county this year made a yield of six times that amount on one acre, and several boys reached above the hundred bushel per acre mark. This shows us plainly that we can improve our present yields.

We must produce larger yields per acre, and better farming will do it. Our farm areas have almost reached their maximum acreage, but earth's fast increasing millions of population must be fed and clothed. This is a big job, but the farmer is on to it, and when I look into the faces of these intelligent farmers here today, I see they realize the job is theirs and they are going to hold it.

I am so glad to see so many bright, hopeful young farmers here today. They are the hope of our State, and Tennessee needs them all. If they can begin their agricultural life in their early manhood, where we old farmers have to quit on account of age, what a great improvement in agriculture the next fifty years will show. I see in this assembly some old gray heads, who, like myself, fifty years ago followed the battle flag of the Confederacy on many a hard fought field, fighting for what we believed then and still believe was right, that each sovereign state govern its own internal affairs. We yielded to the arbitrament of war, overwhelmed by a very avalanche of superior numbers, but that great question was not settled. It is still a live and burning question in our country, and must be settled some day at the ballot box. You young farmers may help to settle it.

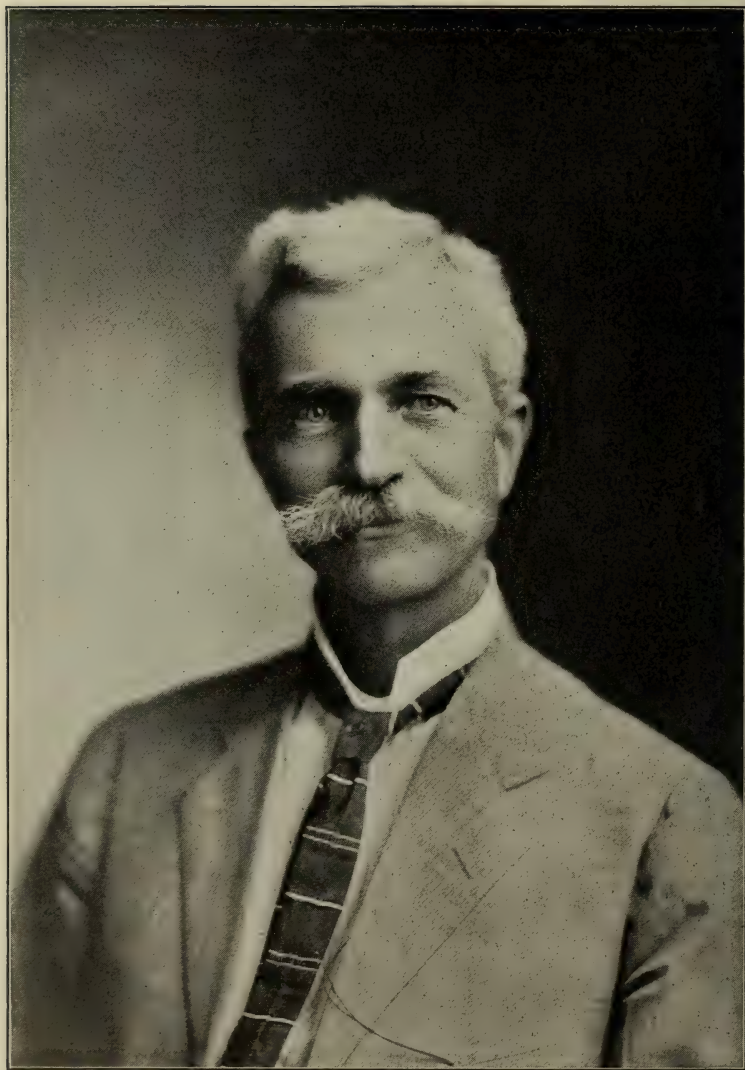
The old soldiers laid down their arms, returned to their devastated homes, and for nearly half a century have worked faithfully to build up the land they loved so well. They are nearly all gone now, but they leave a goodly heritage to the rising generation, with the hope that they will guard well their trust, be faithful to their country and their people. Hold up the proud name of our Tennessee, because of its fond associations and sacred memories. I thank you.

ANNUAL ADDRESS OF PRESIDENT.

At the conclusion of Mr. Meroney's address, President Sam N. Warren delivered his annual address, at the conclusion of which he announced that he would not be a candidate for re-election as President, believing that this was an honor that should go round. Mr. Warren's address follows:

Gentlemen:

I am glad to again have the pleasure of greeting the farmers and stock breeders of Middle Tennessee. They are the best people on earth and live in the garden spot of the world. The industry which you represent is not only one of the greatest and most important on earth,



Sam N. Warren, Spring Hill, Tenn., Retiring President of the Middle Tennessee Farmers' Institute.

but will require more brains to develop it to its highest point than any other profession or vocation, for there is no reasonable limit to its possibilities.

Very much remains to be done and learned, though great progress has been made in agriculture in the past few years, enough, in fact, to justify the belief that in time agriculture will be conducted successfully only in a scientific manner.

As we wish to make a success of our business, we must educate ourselves to the end that we may do intelligent work upon the farm, and thus reap the greatest returns for the time and labor expended, for the day is past and gone when main strength and awkwardness will be in demand at any price. The farms need men upon them "who know how," for, as I have said, there is no limit to better farming. Old Mother Earth was so responsive to man in the past that the old saying, "If a man can't make a living at anything else, he can at farming," seemed true.

But soil robbing, together with the rapid increase in population, has caused a necessity for improved methods. Our agricultural college and experiment station, together with our Commissioner of Agriculture, are doing a great work for the farmers.

For the asking they send to them bulletins explaining in detail their experiments. But what one reads does not make as great an impression as what one sees. Therefore, I would like to see a good, practical demonstrator in each county of the state, who would visit the farmers and show them how to plant and cultivate their crops. I believe the increased yields, even the first year, would more than pay all cost of same.

I wish to see county organizations, and to this end I am going to ask that each county which has not now a Farmers' Club organized, organize one here and now. For what we need is to get acquainted, exchange ideas and suggestions which will cause us to think anew on old subjects; then put these new thoughts into action with the result of a decided decrease in the energy and awkwardness heretofore used, and a very decided increase in compensation, and in doing this we burn our candle of trouble at both ends.

We often hear the complaint of the high cost of living. Sometimes this may come from the cost of high living, but I do not believe that often this latter could be charged to the farmer.

'Tis true many of them live better than their fathers did, but are they not entitled to better living because of the fact that they are better producers?

Their trouble is that they, the producers, are not getting out of life what they are entitled to. Why? Because they do not receive the worth of what they produce, yet pay more than the worth of what he is forced to buy. Why? Because he is not educated up to cooperation, either in buying or selling. Alone, he buys in small quantities, at retail credit prices, whereas he might go in with a few neighbors and buy supplies at wholesale cash prices. When he sells, he sells alone, whereas

he might have put his pigs, lambs or cows in with his neighbor and gotten a better price.

When he buys, he takes the seller's price and weights.

When he sells, he takes the buyer's price and weights.

Yet in spite of all these trials and tribulations, the Middle Tennessee farmers should be the most prosperous and the happiest people in the world. Why?

There is not a farm owned by one of them that cannot be made to produce more than it is now producing. The railroads bring them in here free of charge. You are getting free lectures by men who know how, on all subjects which should interest you.

Your boys are here learning to produce more corn per acre than you ever thought was possible. Your wife is here learning new wrinkles in making home happy and how to cook better than mother did. If you will get a few Jersey cows they will feed the baby and the calves and pigs, they will pay your taxes, paint your house, buy farm and kitchen necessities, and give you enough spare money to take all the family to the State Fair, a place you should not fail to visit.

FARM DEMONSTRATION.

Mr. H. D. Tate, State Agent of the United States Department of Agriculture, delivered an interesting address on "Farm Demonstration."

ADDRESS OF COMMISSIONER T. F. PECK.

At the conclusion of the address of Mr. Tate, the President introduced Commissioner of Agriculture T. F. Peck, who spoke as follows:



I am grateful for this opportunity to talk to the farmers of Middle Tennessee on this occasion. I want you to know more of the work of the Department of Agriculture and what it is doing to help the farmers of the state to improve their conditions.

Tennessee is largely an agricultural state with almost unlimited possibilities. The work of developing these possibilities is naturally divided into many branches. All branches of that work should have one center or executive head, and as with the Department of Agriculture of the nation being the executive head of every undertaking along agricultural lines, so should the State Department of Agriculture be the recognized executive head of work in agriculture undertaken by the state.

Our duty first is to enforce the agricultural laws now on the statute books. Among them are the fertilizer law, the feed and seed control law, the live stock law, the law governing the inspection of nurseries, orchards and apiaries.

When our lands became worn and deficient in plant food, the farmers began looking for fertilizing material to supply the necessary plant food, and soon the manufacture and sale of commercial fertilizers was inaugurated, and it was necessary to pass laws regulating the manufacture and sale of fertilizers that the farmers be protected and get what they buy. It is our duty to enforce this law.

LIVE STOCK DISEASES.

With the development of the live stock industry and the movement of live stock from one section of the state to another, diseases of live stock were easily spread from one section to another, and we had introduced live stock diseases into our state that have cost the live stock interests millions of dollars. It was necessary to enact laws to govern the shipment of live stock and to eradicate the diseases. This is another duty, to enforce the live stock laws.

With the development of the live stock industry and the dairy industry there has been developed a mammoth industry in the manufacture of commercial feeding stuffs. It was necessary to pass a law guaranteeing to the farmers that the feed would contain the feeding value claimed for it. It is our duty to enforce this law.

When it became apparent that our fields were becoming polluted with noxious weeds and that much of the fields and garden seeds placed on the market were low in germination (would not come up) was not true to name, it was necessary to enact a law governing the sale of field and garden seeds, and it is the duty of the Department of Agriculture to enforce this law.

In the shipment of nursery and orchard stock, insect and fungus diseases have been distributed over the country. To protect the fruit and truck growers of the state it was necessary to pass a law governing the inspection of nurseries and orchard stock for shipment. This is another law that the department enforces.

HONEY IN TENNESSEE.

I doubt if the majority of you present realize the present magnitude of honey production. We rank third among the states, and it is our own fault that we do not rank first. No state in the union is better adapted to this industry, and I want to tell you that in Dr. J. S. Ward we have a man who will not only do the necessary inspection work, but he will make the people of Tennessee appreciate our natural advantages for this industry, and will also show them how they can get started and the nice profit they will surely get from their efforts.

We have, in addition to close inspection, gone further and have conducted a campaign of education, both to the consumer and producer, getting the consumer to understand that if the law was rigidly enforced he would be protected and getting him to insist that all material pur-

chased be properly stamped and labeled. We have endeavored to convince the manufacturers and dealers who wanted to supply an honest product, that the inspection law was a protection to them against the unscrupulous dealers. We have abundant evidence that both the consumer and honest producers appreciate the work of the department, and are cooperating with us in every way in the enforcement of the laws. We have not been content to stop here in our work.

While we do not in any way pretend to infringe on the work of the College of Agriculture, or the experiment stations, or any of the agricultural schools, we are trying in every way to cooperate with them, and assist them in making their work most effective. We appreciate the experiment work that is being done by the experiment stations fully, and do not minimize their work in any way, but want to take the facts that they have established and help make them available to the farmers who have not had advantages along this line.

We recognize in the College of Agriculture the source from which we are to obtain trained men for agricultural educational work. We are trying to popularize the College of Agriculture and induce more of our young men to take advantage of some of the opportunities afforded them there, that they may become leaders in the development of our splendid state and its resources. In addition to this, we have undertaken to take up some of the simple, essential things necessary to improve conditions of the small farmer and get him to see where he can conduct his farm along practical lines with equipment within his reach and materially improve the earning capacity of his farm, at the same time increasing its fertility. Most of you, no doubt, have seen in your county papers, "Talks to Farmers," by this department. In these articles we have tried to make plain to the small farmer how he can get results in proportion to the large farmer. We have discussed in these articles the question of soil reclamation, how to improve our soil, how to prepare it for crops, how to take care of our live stock; in fact, we have tried to cover all of the subjects of interest to the farmer, and to make the subjects we offer practical for them to follow.

I would be ungrateful to the newspapers of the state if I did not take advantage of this occasion to call your attention especially to their splendid cooperation in the dissemination of information valuable to the farmers. They have been ready to give prominence to our "Talks to Farmers," and have given much space to subjects discussed in our monthly publication that we cannot circulate as widely as we wish because of our small appropriation. They have placed the department in close touch with the thousands of farmers that we could not otherwise reach.

Did it ever occur to you that we do not value our home paper as we should or stop to consider what we expect of it? We depend upon it for local news; we expect it to take the lead in every public improvement; we expect it to proclaim to the world our local advantages, and yet we put off paying the pittance they charge for subscription, and many try to borrow our neighbor's paper instead of taking and paying for it. If the paper is not what it should be, don't you think

some of you are in a measure to blame? If you will show me a well patronized paper, I will show you a good paper and I will show you a prosperous community. Let's do our part and the newspapers can be depended upon to do their part.

RAILROADS AND AGRICULTURE.

The Department of Agriculture has been congratulated upon the work accomplished during the past two years, and we are grateful for the commendation. But I want to tell you the work could not have been done but for the hearty cooperation we have received, and conspicuous in this cooperation has been the railroads of Tennessee.

Politicians wanting to curry favor with the voters have taken advantage of the agitation over trust legislation to regulate certain trusts, to stir up antagonism to corporations in general. They developed in the minds of many an unjust sentiment against the railroads. Did it ever occur to you that the railroads prosper most when the country they traverse prospers? It is conceded that the management of those roads is in the hands of shrewd business men. They would not be shrewd business men if their policy did not encourage the development of the territory traversed by their roads.

I want to tell you that the railroads operating in Tennessee are spending immense sums of money to develop the country traversed, and the development of agriculture is of first importance. They have established demonstration farms along their lines; they have farm demonstration agents; they have cooperated willingly with the Department of Agriculture in every instance.

You remember the agricultural demonstration train operated over the state. It was furnished free by the railroads. You know that there is held each year three farmers' institutes in Tennessee. The railroads furnish free transportation for from two to three thousand delegates to each of these meetings. They furnish transportation to breeders' meetings. We are certainly under obligations to the railroads and should give them credit for their splendid cooperation.

CONSERVATION OF MOISTURE.

Now today there is one subject that I especially want to call to the attention of the farmers of Middle Tennessee—a subject that has not been given the consideration that should be given to it and that is making available to the farmers our annual rainfall amounting to an average of fifty-three inches; sufficient for any demands of any crop that we might want to grow. It is very well known that of all grain crops grown on the soil, in every one hundred pounds about ninety-seven pounds of those crops came from the air and water, and about three pounds came from the soil. We also know that we always get better crops from the same soil when we have sufficient moisture during the growing season than we do when we have a drouth. This ought to teach us a lesson as to the value of moisture.

We have been provided with an abundance of moisture but we have absolutely failed to profit by it, and allow it to go to waste and to carry

with it a great amount of plant food that should have remained in the soil for crop production. We hear of wonderful stories, and no doubt many of you present have seen the splendid results irrigation in some of the western states, showing the value of an available water supply, and the splendid results obtained where they are utilizing that water supply are well known and have been sufficient to induce a great many people to leave Tennessee to go there and farm by irrigation. We have been absolutely indifferent to the fact that we have a water supply ample for our every requirement, if we only profit by it. We can do it if we will. It is free to us; it costs the farmers of the western states millions of dollars as a water tax.

We can prepare our land to make available this water supply if we will. Some of you would possibly like to know how to do so, and I want to take advantage of this opportunity to show you how it can be done. You know that in Tennessee, with very few exceptions, the average depth our land is plowed is not as much as four inches, and under that is a hard pan that water will not penetrate, and all the water falling on it in excess of the amount that that amount of soil will retain runs off and carries with it the available plant food.

To retain this water it is necessary to break up that hard pan, increase the depth of our soil. Instead of plowing about four inches deep, plow eight, twelve or even eighteen inches deep; then we can materially increase the moisture holding capacity of our soils by addition of vegetable matter to the soil. You can satisfy yourself as to this by taking three vessels and filling one with sand, and one with pulverized clay and the other with vegetable soil. You will find that the clay will take up twice as much water as the sand, and the vegetable soil will take up four times as much, so you see that you can get your soil broken deep and by addition of vegetable matter, you can get your soil to retain much more moisture.

Then during the winter season always keep a cover crop on the ground, and during the cultivating season keep a dust mulch by constantly stirring up the surface, breaking up capillary action of water and retaining the moisture for the plants as they need it. Plants take their food in the form of soup or sap, and the moisture must be in the soil to dissolve this plant food to make it available for the little hairy roots to feed upon.

Now there is not a man present here today who cannot do the things necessary to profit by the rainfall that will mean so much to him if he conserves it. It simply means instead of breaking the land three or four inches, break it two or three times that depth. Instead of taking all of the vegetable matter off of the soil manage to grow and turn under a vegetable crop for the soil each year. Our long growing season makes this possible, and at the same time secures a money crop for ourselves.

I hope that every one of you will give this question serious consideration, because it means increased revenues, many fold. Of course, I know that you cannot do this all at once, that you cannot subsoil all of your land in one year. You cannot provide for it all the vegetable

matter necessary in one year, but you can take a few acres and the next year a few acres, until you can get your farm under a better state of cultivation. Will you do it?

Another subject that I want to touch upon briefly on this occasion for the benefit of the farmers who are here from the highland rim surrounding the Middle Tennessee basin. I want to reiterate what I have told many of you before, that this highland rim is capable of greater developments and it offers splendid opportunities for the homeseeker because land is still cheap, and with the right kind of management can be made to produce profitable crops at a reasonable outlay of money and labor, with the added advantage of your splendid water and climatic conditions.

MAINTAINING SOIL FERTILITY.

In the early history of your country this land was used mainly as a range for live stock. The Indians kept it burned off for the benefit of the grass. The early settlers followed their example, and this practice continued for possibly two centuries, has deprived the soil of its humus, leaving practically nothing but a subsoil. But the constant burning has left the soil well supplied with potash. By supplying the nitrogen, the humus and phosphoric acid it will produce magnificent crops.

If I owned a tract of this land I would get a portion of it in cultivation. I would grow crops that would give me the largest tonnage of vegetable matter and this I would turn under. I would also add phosphate and would neutralize the acid conditions from turning under heavy green crops by a dressing of pulverized lime, each year breaking deeper until I had sufficient depth of soil, sufficient humus and sufficient nitrogen, this from leguminous crops. When this soil is handled along lines suggested it will demonstrate the possibility of lands on the highland rim for agricultural purposes and its superior advantages for fruits and truck crops. I hope some plan can be worked out to secure a demonstration farm in each of the counties embraced in what is known as the highland rim.

SPECIALIZING ON THE FARM.

Now a final word that will be applicable to the farmers in every county in Middle Tennessee. I want to urge upon you the value of specializing in the production of your farms. You know the difference when you have anything to sell and in having the buyer come to you and ask you what you will take, instead of you having to go to the buyer and ask him what he will give. One of the troubles confronting the farmer is the low price he receives for his products, and at the same time the high price the consumer has to pay when he gets it.

I would suggest as a remedy that so far as the farmer is concerned that you specialize by communities in producing certain products. For instance, if the conditions are favorable for fruit growing, form a local organization, get together and study conditions, and then raise a uniform product, prepare it attractively for market, let it be known that when that particular product is wanted you have the best to offer and in quantities sufficient to attract buyers to your community. You

know very well that if any one is wanting to buy a certain kind of apples, peaches, or any kind of fruit, that they would prefer to go where they could buy in quantities to justify them instead of having to pick up what they wanted in odd lots and rearrange it and grade it before offering it for the market.

If you are interested in live stock; if the conditions in a community are favorable for the live stock industry, let the farmers of that community get together and decide upon the breed of live stock that they can be most successful with; then instead of each farmer having to work independently and each farmer breed a different kind of live stock, all adhere to the same breed and your products will attract the best buyers, who will come and offer the best prices. This suggestion is not a theory nor an experiment, but a proven fact by many progressive communities in other sections of the country.

COUNTY DEMONSTRATION FARMS.

Since I have been connected with the Department of Agriculture, I have been urging the importance of the county demonstration farm in connection with the county high school. The need and value of the demonstration farm grows more apparent, and a plan for its establishment will be submitted to the coming legislature that will meet with general approval, and I hope during the coming year to see many farms established.

I am proud to be classed as a farmer, because his vocation is the oldest and should be most honored. All other vocations grew out of the needs of the farmer, and if the vocation is not respected as it should be, the farmer himself is to blame. We must advance or recede. It is hard to stand still. Too many of us stop to watch the progress of those in other vocations and we have fallen back. Other people will respect your vocation in proportion to the respect you have for it yourself. Your respect will be largely measured by your success and your success will be measured by the intelligent effort you put into your work.

THE FARM FOR YOUNG MEN.

Now, a final word to you young men. You are here from all over Middle Tennessee. You come from comfortable, frugal homes. Some of you, when you contrast the industrial life you have lived and some of the inconveniences you have labored under when you come to the city and see the glamour and artificial life as it appears to the country boy unacquainted with the real conditions, might wish you could exchange your place for one in the city. If you could realize what you would have to encounter, and the small chance for success, you would be slow to exchange your present opportunity for the close competition you would find in the city, for in the city you will find applications for every position. You will find demands for more than your salary. You will find young men trying to keep up appearances in debt, with a poor show of getting ahead. A few succeed in the city, but for every-

one who does there are many who are failures, and in all probability you would not remain in the city long until with the majority you would find it is a struggle for existence.

Now, young men, I grew up on the farm. I know about its hardships and its disadvantages, and I know that many of them can be removed. You may object to the labor on the farm. Do not come to the city hoping to escape work, long hours and poor pay. Do not forget that both man and beast must eat. Do not forget that our population is increasing faster than our production, that prices for farm products are good now and will grow better; that the farmer who is willing to work and put intelligence in his work is going to be the most independent man, and will be more successful as the years roll by and other vocations will recognize his importance as their dependence upon him grows. My young friends, if you fully appreciate your opportunity I am sure you will stay on the farm.

I am gratified with the attention and interest in this meeting. I hope it will result in the organization in every county of an active farmers' institute and a sub-organization in the several districts in the county, and that the farmers may do the practical things within their reach that will make the farming industry of Middle Tennessee what it ought to be. You can rest assured you will have the hearty cooperation of this department in your efforts.

HOME-MAKERS OF MIDDLE TENNESSEE.

Mrs. J. Taylor Stratton, President of the Home-Makers' section of the Middle Tennessee Institute, was presented by President Warren, and delivered a very interesting address, stating the objects and purposes of the Home-Makers' Association.

After some announcements by the President, the convention adjourned until 1:30 p.m.

AFTERNOON SESSION.

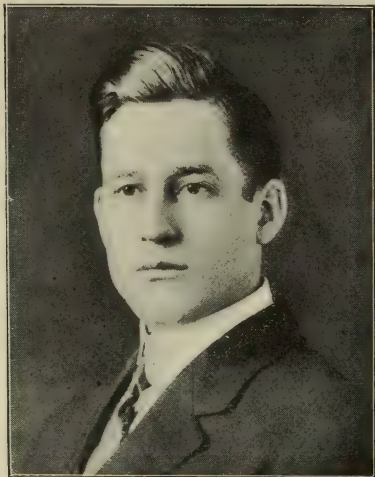
At 1:30 o'clock the convention was called to order by President Warren, who then introduced Prof. J. C. Pridmore, of the University of Tennessee, Knoxville.

Prof. Pridmore spoke on "Selecting Corn for Seed," and in a clear and convincing manner explained the many points of his subject. He illustrated his remarks with a blackboard, and showed the difference in production from inferior and superior seeds. At the close of his address many questions were asked the speaker, and much good was evidently derived by the members present.

Prof. Pridmore's address follows:

SELECTING CORN FOR SEED.

Mr. President, Ladies and Gentlemen:



It gives me great pleasure to discuss with you this afternoon a subject that is of such vast importance as we consider the selection of our seed corn to be.

Corn is our greatest American grain food for man and beast, and when properly managed, will produce more food per acre than any other cereal. And it is one of the surest crops.

The most recent report from the Secretary of the United States Department of Agriculture shows that the corn crop of this country last year was more than twice as great in value as that of the cotton crop

for the same period and but little less than the combined values of cotton, wheat and the oats crop for the same period of time. The report in this connection states that corn is by far the leading crop as a wealth producer.

In the State of Tennessee, we find similar conditions existing. Our corn crop last year was but little less than the combined values of all the other field crops. The corn crop constituted fifty-one per cent of the total crop value of the state.

Notwithstanding these facts, our state average yield was not by any means what it should have been. We made only twenty-five bushels per acre. Here in this rich soil of ours, with an abundance of rain and a long growing season, we should be making far more than this. In fact, this is, by reason of advantages, the corn belt of the country. Yet we are making but little more than half the corn crop that those farmers in a less favorable section of the country. Cold, bleak New England last year made over forty-two bushels per acre. The cause of this difference lies with us, and not with the conditions of the two sections. We should be making more than any of the northern sections of the country.

Last year the State of Tennessee grew approximately 4,000,000 acres of corn. At twenty-five bushels per acre we produced 100,000,000 bushels. At 60 cents a bushel this was worth \$60,000,000. If this could, by any means, be increased as much as five per cent, \$3,000,000 wealth would be added to the state annually.

If this is too much to fully appreciate let's take the work by counties, using Davidson, the one in which we are meeting today, as an example. Last year we grew 40,000 acres in corn, and produced as

an average 28 bushels per acre, making 1,160,000 bushels, worth at 60 cents per bushel, \$696,000. A five per cent increase would give to this county \$34,800 yearly! If this is worth while, the next thing for us to do is to see how the increased production may be brought about.

An increase in yield of our corn may be brought about by two ways, namely: By improving the conditions under which the corn is grown, or by improving the yielding power of the corn itself. If grown under the same conditions experiments show that we may increase our yield from five to twenty-five per cent.

Improvement by working upon the corn itself may be done by two methods, namely: By selection, or by hybridizing or crossing one plant upon another. Selection may be practiced alone, and for the general farmer this plan is the safer one to recommend.

The plant breeder is governed by the same laws in improving his plants that govern the animal breeder in improving his strain of live stock. The same reasons that make it necessary for choosing the best animals in breeding work make it necessary to select the best possible seed for planting purposes, if one wants to improve the crops. This is true, because the offspring in the animals, in its characteristics, is influenced by parents; the yield and the quality of corn is largely dependent upon the grade of seed planted.

Each plant, each ear of corn, has an individuality of its own—no two ears, as in the animal kingdom, will be exactly alike in any respect. For that reason the ears differ in yielding power as they differ in other characteristics. Some ears have a tendency to give a low yield, while other ears of the same variety tend to produce a very high yield. That being true, since in corn production is the factor sought, we should select and grow from the high producing ears. This is best done by what we are pleased to call the ear-to-row test.

By this method we plant a part of one ear to a row, not mixing the corn from other ears for that row. The remnant is saved for future use. In the fall weighings are made of each row, calculated on the acre basis, and comparisons made between the yield of the various ears. In some experiments great differences have been shown in this respect. But by selecting the ear that gave the highest yield, and planting the following year in an isolated place the remnant of the ear that gave the high yield, we will be going a long way towards increasing our corn yields.

We like to recommend the practice of seed selection in the field where both stalk and ear, with their characteristics, may be studied and compared. Then the ear-to-row test should follow.

In cases where freezes are frequent, it is safer to take some steps towards drying out the corn thoroughly before it freezes, since this process of expansion by freezing often does serious harm to the germ of the corn. Drying may be accomplished by racking, or by tying and hanging in a dry, well ventilated place.

The question of corn improvement is a very economical one, and

needs more attention than we have ever given it. As already stated, it is an easy matter to greatly increase our yield by selecting and improving our seed. It costs nothing but a little time.

CORN CLUB WORK.

Prof. M. L. Hardin, of Camden, Tenn., delivered a very interesting talk on "Boys' Corn Club Work in Tennessee." He complimented very highly the young members of the clubs over the State, stating that they were great factors in the betterment of agricultural conditions throughout the State, and throughout the entire South. He stated that there were as good farmers in Tennessee as anywhere in the world, but that there were also some inferior ones. The agricultural status of the State was gradually being improved, he said, by the great interest being taken by the boys in better farming. The corn clubs are an innovation in the State, but their influence for good is being felt already in the increasing yield per acre.

Prof. Hardin's address follows:

BOYS' CORN CLUBS IN TENNESSEE.

Mr. President, Fellow Farmers, Ladies and Gentlemen:



This is the missionary age in American agriculture. The watch cry now is to carry the truth to the farmer—bring to his door the latest conclusions of skillful science and enlightened practice. The Department of Agriculture is sending a-field trained farm demonstrators, agricultural colleges are doing extension work, counties are employing agricultural experts, better farming associations have been organized, and even the great corporations of the country are giving millions of dollars to stimulate interest in a more prosperous rural life. Yet, with all this, the redeeming gospel of agricultural truths is

not as universal as should be.

The farming class of today is all too insufficient in the dignity with

which they surround their profession. The so-called "professional man" has too long been regarded as the superior of the tiller of the soil, and the farmer's children have unconsciously been taught to reverence the physician, the lawyer, the minister, or the school teacher, and to look on their own calling as one of servitude. In these days, with all the advantages of rural training, of farm education, of application of mind to muck and science to soil the farmer boy should be taught to hold the art of agriculture in high reverence. The heel touch of the green sod, the smell of fresh-turned earth, the communion with a growing nature—are not these as noble as Blackstone or Hippocrates?

I do not believe that farming has "gone to the bad!" There are good farmers and poor farmers, as well as good and bad merchants. The good farmers are prosperous, contented citizens, alive to the problems of life and in touch with improved methods of producing, selling, and buying. The man at the bottom is the one in whom interest is, and should be, centered. This class in some measure includes most farmers in Tennessee, with varying degrees, of course.

We have too long practiced a "rotation of crops" or rather "crop." Corn is followed by corn, by corn, by corn, etc. This with scrub seed and scrubbiest culture has made farm life a hard, hopeless existence, especially to the farmer boy. He works from year to year on the old farm, sees its fertility grow less from one crop to the next, while land values per acre increase. His father's measure of prosperity is often a gain of forty dollars per year on a debt of \$130. Is it any wonder that he despairs ever owning a home in the country and seeks employment in the city, as thousands of our most energetic country boys are doing every year?

It was for the purpose of teaching a hopeful agriculture, a profitable agriculture, and a comfortable agriculture that the late Dr. Seaman A. Knapp first organized the Boys' Corn Clubs.

There are three points to the rural life problem which the corn club can help to solve. These are the inefficient rural school system, the lack of social organizations in the country, and the lack of something on the farm itself which he can call his own, and in which he can take an active interest.

The school subjects are all right in themselves, but they are not made practical by application to the problems of the farm. Calculations in arithmetic are based on "stocks and bonds," on "bank discount," or on deals in merchandise or manufactured articles. The corn club requires the boy to deal with the measuring of his acre; finding the number of square feet, square yards, and square rods contained therein, and the different lengths and breadths required to make an acre; it has him calculate percentages of germination, cost of producing corn, profits and losses. In this process it teaches him book-keeping as well as arithmetic, which is *alive* to him. He begins to notice that his history has corn, and Indians, and American colonists intimately associated. He learns that corn does not grow in the extreme North, extreme South, in the Western States, nor along the immediate

Atlantic coast and his geography takes on an added interest. His language lesson is not a dull task of copying when it can relate to his crop at home. He learns soil chemistry, plant physiology and animal insect life in his study and begins to see how wonderfully the Creator has made the universe in which he lives. Think you that a school like this is good for *your* boy?

There is another phase to country life—the social side is neglected. The boy longs to meet his fellows, to play games with them, to see the picture shows, to hear music, to read books, and to engage in the various activities that to him mean life. Too often, on account of poor soil and large acreage he must work from Monday at 4 a.m. to Saturday night at 8 p.m. He goes to town occasionally and sees the town boy enjoying the things he longs for, and resolves to get away from the farm at the first opportunity.

The corn club gives the strength of organization. The boy sees and competes with his fellow boys from over the county and over the State. He sees hope at home for the things for which he longs and many others in addition to these. Larger production means more money to build better roads, comfortable homes, pretty school houses, and nice churches in the country. He even dreams of owning an automobile which will make the trip to town a matter of minutes instead of hours—and he owns it. The farm home is no longer unattractive to a boy who can realize the possibilities that lie at his door, and you will not find this boy working on the street-car for forty dollars a month while the fences go to ruin and the land washes away at home.

The corn club supplies the longing for something to call his own. Did you ever give your boy the “runtiest” pig or the “broken-legged” calf, and tell him it could be his “very own?” Life at once means more to him. He has something to care for. Did you ever notice how he feeds his property? It is soon the fattest, sleekest animal on the place, and you want to “go back on your bargain.” Every boy wants to own something, and the acre of corn is a whole plantation to the boy who calls it his. By all means let him have all it makes. Encourage him to buy thoroughbred stock with part of his profit and feed this with some of his corn. Do you think a boy treated in this way will leave the farm?

The organization of corn clubs should be as simple as possible. Let the superintendent of schools take up the work first with his teachers in the institute or monthly meetings, for their earnest cooperation means much to the success of the work. Interest the business men and farmers generally in the plan. This can be done by seeing them, by writing them, or by writing letters for publication to the county papers. Then ask for members. Tell the boys it will cost them only “one cent to join,” and that is to be spent for a postal card on which to apply for membership. Tell them that this one cent is the only fee for a year’s membership and the privilege of competing for prizes in the corn show in November. Tell them that the United States Department of Agriculture will send them books giving the best methods in corn growing, and that you will come to their fields, see their corn and

give what help you can. Put enthusiasm into the work. Have a meeting as soon as your club is organized and let the government agent and others address the boys on corn growing and the possibilities of the club. All through the year keep writing to the county papers (and most of the boys will take these), giving encouragement and instructions. Gradually lead the boys to see a broader field than corn growing in the club work, but go slowly; let your motto be, "One thing, and that well."

In my own county (Benton) we started with 103 members. Mr. Thos. A. Early came down one cold, icy day in February, I believe, and helped us organize. Out of this number about fifty grew corn. Thirty-six exhibited at the corn show. I wrote the boys regular letters through the papers, and would sometimes get letters from them to be answered in the paper. In my school visiting I always called for the "corn club" boys (and the "tomato club" girls, for the work goes hand-in-hand). If there was an acre near enough to the school house we visited it, talked corn, and had a good time. The boy felt after this that there was some dignity to his work. You have but to see the sparkle in the eye of a real corn club boy to know what it means to him.

Our corn show was November 2. We sent the boys each a letter of instructions, telling how to gather, measure, and weigh the corn; gave a list of rules as laid down by the department; and also gave some points on selecting, packing and getting the exhibit to town. We were fortunate in securing a splendid new store building for our "Corn and Canning Show." One side of this was given to the Girls' Canning and Poultry Club, and the other to the boys. Thirty-six boys and fourteen girls exhibited. For two days we had our exhibit room packed with farmers, their wives, business men, teachers and ladies of the town seeing and asking questions. A prominent business man made the statement that "The corn show will be worth ten thousand dollars to Benton County."

A few points as to its present money value. The thirty-six boys represented a yield of 1,688 bushel of corn. This at 80 cents per bushel was worth \$1,350.40. The average yield for the county by old methods of culture is 3 barrels. The average of the corn club boys was over 9 barrels. They gained for the county \$918.40 by using corn club methods. Did it pay?

There are nearly 30,000 acres of corn grown yearly in the county. If improved methods could be applied to each acre and make it produce just six barrels more per acre, it would mean 180,000 barrels more corn per year, and this at \$3 per barrel would mean \$540,000—enough to build several miles of good road, put a well-lighted, sanitary, modern school house in every district, and add some improvements about the old home. Does it pay?

Teach the boy to love the farm. Show him that it is a profession requiring brain and education. Show him the ancient dignity of the craft. Show him that Homer has given us an Odysseus proud of his skill with the plow; that a Pliny, a Plato and a Virgil found their chief

delight amid the fields. That Washington laid down arms and state to take up "the most healthful, most useful and most noble employment of man."

Teach him to see that "the secret of the best persons" is to "grow in the open air and to eat and sleep with the earth."

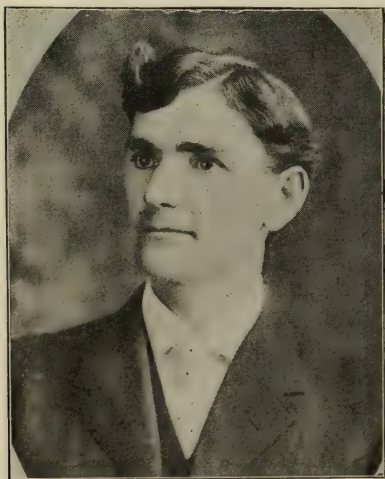
At the conclusion of Prof. Hardin's address many questions were asked by the delegates present, and answered by the speaker.

BOYS' CORN CLUB WORK IN MIDDLE TENNESSEE.

County Superintendent B. H. Gaultney, of Giles County, addressed the institute on "Boys' Corn Club Work in Middle Tennessee," giving a history of the work from its conception to the present time. Mr. Gaultney stated, in the course of his remarks, that the Boys' Corn Club movement was already beginning to solve the many agricultural problems of the State, one important result being that it stimulated the "stay-on-the-farm" movement, and that its good was being felt in many other ways. A general discussion took place at the close of this address.

Prof. Gaultney's address follows:

Mr. President, Ladies and Gentlemen:



I am glad of this opportunity to speak to the farmers of Middle Tennessee on what I consider to be the greatest agency in existence for the dissemination of agricultural knowledge, and teaching its application in the most practical way. This agency is the Boys' Corn Club.

I say the greatest agency because it has to do with the boys. The boys of today are the farmers of tomorrow. Any influence which tends to develop the thought side of farm life and present in a practical way the possibilities of an early trained and searching mind is as boundless as the space which surrounds us.

The corn clubs in Middle Tennessee are about two years old. During this time the boys have taken the lead in demonstrating to the farmer what the possibilities are in corn growing in this section.

The tendency has been to educate the boys from the farm. The verification of this statement needs no further proof than that of the

latest census of the agricultural sections. Many of the counties in Tennessee have lost in population in the last ten years. Most of the exceptions to this rule are those counties that have large towns or cities.

The urban districts are filled with people who came from and who would gladly go back to the country, but that they realize that the opportunity has been lost. The error is due to the fact that they did not know and could not appreciate the real possibilities of country life. They did not know what independence, wealth, health and happiness lay in nature's folded arms awaiting some agency to discover them and point the way.

The logical course for the corn club is, the organization in and through the rural schools. This opens the way for practical and efficient teaching of agriculture in the rural schools. Agriculture is being and has been taught for years in the country schools, but what of the result? The boy was taught that deep plowing conserves the moisture, that there is great profit to be derived from well selected seed and a hundred other things, but they were never put to practice or test.

The corn club organization enables the immediate application of the lesson taught. For example, a description of the plats and soils may be submitted for class discussion, which will call forth the best thought and judgment from the individual, for he is anxious for results in the coming contest. Varieties of corn are learned and samples of each are submitted by the individual members for lessons on show corn and seed tests, the methods of cultivation, composition and application of fertilizers, and the value of striking at the psychological moment. All these lessons must be applied by the pupil as they are taught and the different phases should be discussed in season.

At the winter session comes the Community Corn Show to be held at the school house. This show gives the boy an opportunity to have his judgment measured with that of his classmate, by an experienced and competent judge, on all of the lessons given throughout the season pertaining to corn, for his show and yield depend very largely on how well these lessons have been learned. Then through the county and the state shows, the winners may compete with those of other sections. This complete system insures interest and best efforts from the beginning.

The fact must not be overlooked that the community corn show will be a potent factor in making the school the social center of the community, a distinction once enjoyed by the rural schools but lost to them now. In making the school the community center, the remedy will be applied which will awaken greater interest in rural life and rural education.

President Warren then introduced Prof. J. W. Brister, State Superintendent of Public Instruction, who, in a few remarks, brought out the proposed memorial to Dr. Seaman A. Knapp, which is to be erected in the city of Nashville, if the necessary funds can be raised.

Prof. Brister gave a history of Dr. Knapp and his great work in the South, and urged the farmers to give their moral and financial support to the proposed institution.

Prof Brister then introduced Thomas A. Early, who spoke along the same lines, concluding with an appeal for subscriptions. More than a thousand dollars was subscribed by the delegates present, and other contributions will come as a result of the address before the Institute.

Mr. Early's address follows:

WHAT THE KNAPP FARM AND SCHOOL WILL DO.



Dr. Seaman A. Knapp, the founder of the Farm Demonstration Work in the South, of the Boys' Corn Clubs, and of the Girls' Canning Clubs, died April 1, 1911. His work has grown until there are now in the South one thousand agents, demonstrating better methods of farming and home-making to fully a hundred thousand farmers, seventy-five thousand boys, and twenty-five thousand girls.

Immediately following Dr. Knapp's death numerous suggestions arose throughout the South in regard to a memorial in his honor. It was argued that we are prompt to build monuments and pay tribute to the heroes of war, and why not to a hero in the arts of peace? Dr. Knapp's work and teachings made it well nigh impossible to erect a monument of cold marble or dead bronze. It was felt that there must be a living memorial. A Committee was organized with representatives from every Southern state. After careful deliberation it was decided to erect a Knapp School and to purchase and equip a Knapp Farm. The General Education Board of New York offered to give \$250,000, the interest from which should go to the running expenses of such a Country-Life School in connection with Peabody College. The Memorial Committee has undertaken to raise \$150,000 for the building and for the farm. This is to be a Demonstration Farm and a Demonstration School.

Nothing like this school has ever been worked out anywhere. It is a great opportunity for a distinctive work and a great service. The memorial building for the use of this school will be located on the campus of Peabody College, and will contain a life-sized statue of the South's great benefactor and friend, so that his great, masterful and benevolent personality will always be an inspiration to the thousands who may come and go. The farm will be located within ten or twelve miles of Nashville, and will be conducted in accordance with

the demonstration methods. It will contain about two hundred acres. Pure-bred seed and animals will be developed. The best devices and implements will be used. Crop rotations will be worked out for different Southern conditions. Demonstration agents, rural school supervisors, state and county superintendents of education, and other workers will make this farm a rallying point, in order to carry back to their states the benefits of the work done there. Corn Club boys and Canning Club girls will also make occasional trips to this agricultural Mecca for inspiration and instruction. The pure-bred products of the Knapp Farm will be offered as prizes to the boys and girls who do the best work.

Here is a vital fact: Farm life in the South must become more productive and economically profitable as well as more attractive and humanly interesting.

At the bottom of every sort of trouble, and every so-called problem in the South, is the money question.

The power to increase the profits of one's toil is an indispensable means to the great end of happy and righteous living. It requires money to insure healthful and wholesome surroundings, to train the cook or to educate the housewife. It costs more to have washing done in a clean place than in a dirty place. It takes money to save the babies and the children from improper food, and from the germs of typhoid or pneumonia carried to them from poorly equipped kitchens and unsanitary cooking. It costs pains and money to safeguard the water and milk supply.

And it requires money to put healthful schoolhouses in place of the too frequent death traps now in use. Overcrowded schoolrooms are cheaper than roomy, well-lighted, well-ventilated ones. Better teachers and better teaching are our constant clamor, but they too cost more money. The courses of study in the country schools are too theoretical, abstract and remote from the needs of country life. The schools that count must not only have highly trained and well paid teachers, but they must have the equipment of laboratories, school gardens, cooking and sewing rooms, tools for manual and industrial training. All of these things are demanded for efficient training, and cannot be had without money.

Money becomes, therefore, in the providence of God, a sacred thing with which to minister to the physical and spiritual wants of the human race.

The Seaman A. Knapp Farm and School should deliberately set for itself the task of helping the present and future dwellers in the country to make more money; to become more efficient producers, more economic citizens. It should teach the farmer by demonstration, by experiment, by theory, or by any other possible way, how to avail himself of all the most practicable and profitable forms of the world's knowledge for the sake of happier and more useful living.

Its studies in rural credit systems, whereby the farmers as well as other business men may obtain resources with which to develop their business, will avail much. Typical associations for cooperative industries, such as local creameries and farm insurance companies, will

be studied and applied. Here will be demonstrated better plans for sorting, grading and marketing farm products. To the boys and girls farm accounting will be taught, and among them Boys' Corn Clubs and Girls' Canning Clubs will be inaugurated, while extension courses and correspondence courses for farmers, their wives, their sons and their daughters will not be the least of the helpful influences which will flow from such a school of country life and demonstration farm.

We must also endeavor to increase the earning capacity of women through practical dairying, poultry raising, bee culture, canning, dress-making, laundrying, perhaps truck gardening, or other possible undertakings. The money-spender as well as the money-maker must be taught in the School of Country Life. Many times the wife is the spender of the money, and she needs to learn how to employ economically and scientifically the funds she expends for food and clothing.

But aside from its economic aspect, living in the country must be made more convenient and interesting before men and women, boys and girls will be content to remain on the farm. The Knapp School, by promoting health and sanitation in the country, by teaching improved methods of road building, by promoting cooperation in providing highways and modern facilities for transportation, will contribute toward the desired end. If it can build at moderate cost a well-equipped country home with water supply and home conveniences, and if it can show how reasonably such may be procured in any home, it will have rendered a service to home life in the South.

An important work will be the improved country school. Through it clubs, lecture courses, libraries, the social life of the community may be organized and promoted. The rural high school is a choice agency through which the next generation will learn to improve all the conditions of country life.

At present there are two classes of workers in the South who are employed in bringing about such conditions and in spreading knowledge which will accomplish such results. These are the farm demonstrators, both men and women, and the teachers, both men and women. There is yet no single center where they may be brought together for the exchange of experience or for the acquirement of more progressive ideals and methods. The Seaman A. Knapp School and Farm will become such a center. For instance, what a great service would be rendered if the following could transpire: The farm demonstrator of Virginia demonstrates to the farm demonstrator of South Carolina how to make hay. The South Carolinian shows (not tells) the Virginian how to increase his yield of corn. The Georgian teaches the Arkansan the art of peach growing, while the women from Louisiana exhibit to both the proper method of canning vegetables. An expert chemist contributes such a portion of his science as each may require. The trucker from the tidewater district illustrates his plan of gardening and marketing; the dairyman from the bluegrass region explains the feeding and breeding of dairy cattle, while his wife demonstrates a better way of handling cream and butter.

This School of Country Life will become a clearinghouse for the rural communities of the South, a center for the exchange of valuable

ideas and information practically tested. The farm demonstrators will live upon the farm for several weeks in the summer. The faculty of the college will work out their ideas here for the twelve months in the year. The teachers of the South who come to George Peabody College for Teachers for training will cooperate in studying and in meeting the needs of an ideal country community. They will be allowed to carry back home no theory which they have not first worked out and tested in practical life.

Thus those who teach the adult farmers and their wives will come to understand those who teach the children, the prospective farmers and prospective housewives. The teachers and the farmers will work together. The School and Farm will, in other words, be a storehouse to which the practical farmer and his wife will come for tested knowledge, and at the same time a practice school to which the maker of citizens, the teacher, or demonstrator, will come to try out his theories before being allowed to apply them.

In the above-named ways, and through many other avenues, which will develop as the work grows, will this school and farm serve the South and perpetuate the memory of our great benefactor. His optimism and his common sense, his fine spirit and his practical helpfulness shall continue to bless the sons and daughters of our land. In this way shall we accept and perpetuate his great mission of efficient citizenship. For, in his own language: "The power which transformed the humble fishermen of Galilee into mighty apostles of truth is ever present and can be used as effectively today in any good cause as when the Son of God turned his footsteps from Judea's capital and spoke to the wayside children of poverty."

The session then adjourned until the night session at 8 o'clock.

NIGHT SESSION.

The convention was called to order at 8 o'clock by Jesse Tomlinson, Assistant Commissioner of Agriculture for Middle Tennessee, who presided during the night session in the absence of President Warren.

Mr. Tomlinson introduced Prof. W. J. March, of Crossville, who made a short talk on the potato industry in Tennessee, its possibilities, and the needs incident to the successful prosecution of that branch of agriculture.

At the conclusion of his talk, Prof. March introduced J. E. Converse, who has charge of potato club work in Cumberland County.

Mr. Converse dwelt at some length on the potato club movement in Tennessee, and the great good which it is accomplishing, not only for the members of the various clubs by the increased capacity for production which they acquire through their work along scientific lines, but to every farmer in the State who is willing to give a little attention to the results of the work and the principles involved.

He told of the wonderful record of 384 bushels of fine potatoes raised on one acre of ground by a Cumberland County boy, and the



Cumberland County Potato Club Boys, with J. E. Converse, U. S. Special Agent. Picture made in front of Maxwell House Nashville.

possibility of increasing this yield to 500 bushels an acre. He said that this was the goal toward which every Cumberland County potato club boy was striving, and that they would certainly reach it.

He made special mention of the Cumberland County Potato Club which was in attendance at the institute, with fifteen members, and with a great amount of enthusiasm and with the finest potatoes ever brought to Nashville from any point. These boys, he said, have excellent samples of their potato crops, all raised on the regular plan of the club work for the year, and also a number of photographs and some statistics to add to their display.

Mr. Converse stated that \$3,000,000 worth of potatoes were imported into Tennessee every year, and that this amount could be kept at home if the farmers would only awake to the great opportunities for this industry offered by the soil of this State.

Mr. Converse's address follows:

POTATO CLUB MOVEMENT IN TENNESSEE.

I come before you to introduce to you, as it were, a portion of your State known as the Cumberland Plateau, that great table land that stretches across our State, lying at a general elevation of 1,800 feet, very broken and mountainous at the edges where the streams have cut out gorges, but on top of which is some of the smoothest land in our State, gently rolling and generally well drained.

This plateau was at one time wholly covered with a heavy growth of hardwood forest, which is rapidly being removed in none too saving a manner, leaving a section that must turn to other industries than that of cutting and hauling timber.

The Cumberland County Boys' Potato Club was organized to demonstrate what can be done here in this line, both to those who live on the plateau and those who do not.

The plateau was apparently intended by an All-Wise Creator to grow such products as the lower lands of the South do not, or are not suited to grow. Why was the plateau given that sandy loam soil? Why the high altitude and abundant rainfall? In fact, why was the plateau placed as it is, in the center of the South, if not for this purpose.

It seems to me that the plateau was placed here for a purpose, for there is no other section in the South outside of the Unaka Mountains, that boasts of the high quality white potato. That is the reason that the South does not grow her own potatoes for winter use; Southern potatoes are not so mealy as those grown farther north.

But the plateau can and does grow that quality of potatoes. Look at our boys' samples and ask anybody who has ever eaten mountain grown potatoes. Mr. Anderson, a produce dealer in Nashville, was during the troublesome times of 1861-5 stranded on the plateau. He was fed by one of our potato club boy's grandfather on potatoes and deer steak and he tells me that he never before or since ate such

potatoes. My attention was called to a doctor in Rockwood who sold potatoes grown in his own garden only to buy his winter supply of plateau-grown potatoes.

Many contend that on account of the poverty of the soil that it is not possible to get the yield necessary to make a profit. This is one point that cannot be overlooked, or dealt with too lightly; but I will only call your attention to that county in Northern Maine that produces potatoes at the rate of 200 to 275 bushels per acre (the census shows 225), that exports \$5,000,000 worth of potatoes annually. There, where they grow more potatoes per acre than in any other State in the Union. they fertilize heavily, one to two thousand pounds per acre.

Does it pay them? Look at their houses, barns and stock. Look for some other source of income. No, you need not look further, for such an income is sufficient to build homes and roads, to educate the sons and daughters and bring them back to the farm.

Tennessee is one State that boasts of being capable of producing everything needed. Do not we mine our own coal and iron? Cannot we grow our cotton and wool, corn and oats, wheat and hay? But Tennessee does not produce her own potatoes. We import potatoes at the rate of 4,000,000 to 5,000,000 bushels per year and have one-half as many acres of sandy land capable of producing a good many times the amount we import.

Do we not talk a good deal about patronizing home industry? Does not the country merchant prefer to sell you goods rather than have you patronize the mail order house? Do not the manufacturers and jobbers of Nashville talk as loud and long as anybody about home industry? And does not Nashville import 1,000 car loads of Northern potatoes every year, sending \$250,000 annually into the territory of their rival city Chicago?

To the people of Nashville who are here, I want to ask for your cooperation. You must buy potatoes; why not buy of us rather than some Northern section? Then that \$250,000 will stop near enough that your merchants and manufacturers will get a part of it back.

We can raise the potatoes of high quality and can get the yield that will be profitable.

Of our boys, there were sixteen who competed and made their reports. They made an average yield of 258 bushels per acre at an average cost of \$78 per acre. These potatoes cost 30 cents per bushel to produce, and at 50 cents per bushel there was an average net profit of \$50 per acre.

In counting cost, everything was counted, as corn club boys were expected to count cost—rent of land, \$5.00 per acre, manure, \$2.00 per two-horse load; own time at 10 cents per hour, horse time at 5 cents per hour and everything else at actual cost.

Our largest yield was 384 bushels per acre, and of five boys who won prizes for large yield—360 bushels per acre—their average cost was 27 cents per bushel.

The five boys who received prizes for most profitable crops were headed by a boy of thirteen, whose profit was \$111 per acre, with a yield of 378 bushels per acre. Their average yield was 352 bushels;

the potatoes were produced at a cost of 25 cents per bushel, which gave a profit of \$88 per acre.

In considering the cost, there is a very wide range of different items. Preparing the seed bed cost \$1.30 to \$5.30 per acre, the average being \$2.80. The boy who spent the least made a yield of 312 bushels, a profit of \$86, compared to the boy who spent \$5.30, who received 367 bushels and a profit of \$69. The cost of seed varied also, being \$5 to \$21.40, the planting rate varying from five to thirteen bushels per acre. The boy who spent most for seed made the greatest profit, which shows that it pays to buy the best seed. But be sure to get the best if you pay for it.

The charge for manure varied from nothing to \$40 per acre, with the average cost at \$24. The boy who used none made nearly as much profit as he who used the most. Fertilizer was used at a cost ranging from \$5.50 to \$19.50 per acre, and neither the boy who used the least or spent the most made the greatest profit. This item, fertilizer, is one that the boys recognized the need of but did not use lavishly, the average charge being only \$11 per acre, which means that the average rate was under 1,000 pounds per acre. Many bought their fertilizers with poor judgment, two boys used 1,000 pounds each, of near the same analysis. One paid \$19.50 and the others cost him \$14 per acre, effecting a saving of \$5.50 per acre, and he could have saved more by home mixing.

Of the varieties, no one is in a class ahead of all others. The Great Divide made the largest yield. The Green Mountain came second, and the Carmon third, with the Early Rose and White Elephant following.

Planting was most all done in April, the largest yield following plantings on April 25 and 27.

I feel that our boys have done well. They have demonstrated that it is possible to raise potatoes on the plateau, to get a good yield and make a good profit on the cheapest if not the poorest land of our state. They are a milestone nearer that day when the Cumberland Plateau will be what parts of the Central Basin claim to be—the best part of Tennessee.

Many are inclined to question all the large yields of either corn or potatoes that are made by club boys. We have been especially careful to have all yields properly certified to by men who stand high in their communities, one of whom helped dig the potatoes as well as help weigh them. Only saleable potatoes were weighed.

The prizes, all cash, amounting to over \$320, were from local people except \$25 subscribed by the Tennessee Central Real Estate Association and a like amount from the Globe Fertilizer Company.

TO THE POTATO CLUB BOY.

Here is to the boy, that sturdy lad,

Who grows the crop and beats his dad.

He grows them round, he grows them good

He grows them better than his father could.

Here is to the boy who grows them cheap,

Who handles them well and makes them keep.

He grows them any where, even in the old field,
And you can bet your last dollar he gets the yield.
Here is to the Potato Club Lad,
Who grows the crop and beats his dad.

TOBACCO INDUSTRY IN TENNESSEE.

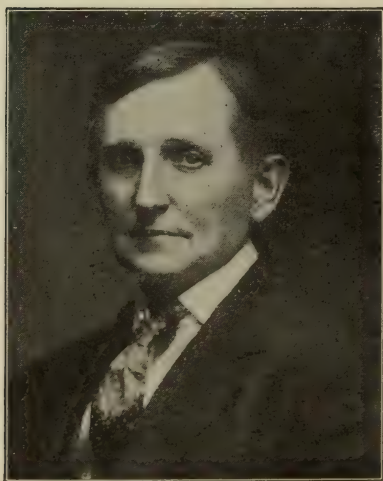
President Pro Tem. Tomlinson then introduced Mr. Hervey Whitfield, of Clarksville, who addressed the institute on "The Tobacco Industry in Tennessee." This was the last number on the program, and the remarks of Mr. Whitfield were listened to with much interest by the delegates.

He stated that certain sections of Tennessee are the best in the world for the production of dark tobacco, and that \$7,000,000 worth of the staple is raised annually in these sections of the State. He gave quite a humorous dissertation on snuff and the art of using it with a hickory toothbrush, and incidentally surprised many of his hearers with the extent of the trade in tobacco in this form.

He placed special emphasis on the fact that organization among the tobacco growers during the last few years had increased its market price fully 100 per cent, and that it had been done without resort to night riders, in his section at least.

Mr. Whitfield recounted the manner in which tobacco is raised and prepared for the market, closing with a description of the way in which tobacco is placed in the hogshead for shipping.

Mr. Whitfield's address follows:



I find that a majority of the people look upon Tennessee as growing a very large area of its territory in tobacco. This is a great mistake, as only seven counties grow, to a large extent, dark tobacco, in its real meaning.

These are Robertson, Cheatham, Montgomery, Stewart, Dickson, Weakley, and Henry. A few other counties grow small quantities, while Smith, Trousdale and Macon grow almost the same quality, but in their failure to cure it with fire the tobacco is not of the dark type.

Greene County raises quite a large quantity of the burley type, all of which is manufactured at home, as the air-cured of Smith and Trousdale is used by Nashville factories.

The tobacco grown in the Black Patch counties of Tennessee is all export tobacco, except what is used for snuff, which consumes in Clarksville alone probably near 2,000,000 pounds. This snuff is shipped in large sacks to a Memphis factory, where it is boxed and sold more extensively in the Southern States, where a very large portion of the women use it. Their method of using snuff is with a brush of black gum or hickory bark, and dipped into the snuff and rubbed on the teeth. Sometimes the family have a box in common. Clarksville is said to be the largest dark tobacco market in the world, handling annually from \$5,000,000 to \$6,000,000 worth of the weed. This is delivered by the farmers and after it is prized in a hogshead is sampled and sold to England, Austria, Germany, Italy, France, Spain and Africa.

Italy, France and Spain are denominated Regie markets, because the governments prohibit individuals from dealing in tobacco, but buy and sell to their subjects, from which source they derive a large revenue. We gave the amount paid for tobacco on the Clarksville market annually, which would indicate that from 50,000,000 to 60,000,000 pounds are delivered thereabout; one-half of this has been sold loose to independent dealers, and the other half has been sold through the association. An organization was formed in 1904, with F. G. Ewing as general manager, and through which instrumentality the price of tobacco has been doubled and without which farmers could not profitably grow tobacco at all.

In order to grow tobacco a person should only exercise some judgment as in growing other crops. The crop is begun by burning plant beds, which is generally done some dry spell between January 1 and March 1.

The plan generally practiced is to clear out a spot of ground in the woods, if possible facing the east or south. After removing the leaves and all trash, brush and wood, splits about the size of fence rails are piled over the plat, which may be of any size desired, but overly large beds are not the best, and set on fire and burned up. This furnishes alkali to the land, kills weed seed and makes it loose and porous.

After burning the land should be dug or plowed, the long and large roots taken out and well raked and the seed sown.

The quantity needed is a level table spoonful to the hundred square yards, 10x10. The seed should be mixed with a bucket of ashes or fertilizer if desired and sowed broadcast over the bed, sowing both ways to have them regular on the bed.

A bed of 100 yards square is reckoned to set ten acres if properly prepared and sown. There are many names of dark tobacco. Some prefer one and some another. Orinoco, Little Yellow, Improved Mammoth Blue, Pryor, Beat All and Madole are all popular varieties.

About March 1 to 10 the beds should be canvased, as a protection against insects, and also to make early plants. When the plants are almost ready to set, the canvas should be removed, and as early in May as possible should be transplanted into the field.

The land should be prepared by a thorough working with plow and harrow, then laid off about three feet nine inches if good land. Fertilizer to the amount of about 100 pounds per acre should be

dropped in the check and upon this a small hill is made. The planting is done as potatoes or cabbages.

After planting a double shovel should be used every week until topping, keeping all weeds and grass off the crop. Topping should be done as early as possible by pulling out the bud and leaving eight or ten leaves to a stalk when possible.

After topping a close watch should be kept on the worm and suckers, as a worm-eaten crop is a lug crop. When cutting begins every man should be onto his job, as careful handling is needed to house a crop in good condition. When tobacco is in the barn is the best time to make a good crop.

After it becomes yellow slow fires should be placed under it, enough to smoke it good and keep it warm to prevent houseburn. The slow fires should be kept for several days and gradually the heat should be increased until the leaf and small part of stem is cured. To stop the fires and wait a few days, when it softens, then fire again two or three days and stop again until it softens again, and then repeat the firing.

This process gives a glossy finish with soot, that makes it more desirable for the foreign markets. After the firing is finished, the first warm season in November should find every man putting his crop in bulk, from which he can strip and rebulk until finished and then has it hauled to the prizing house or to the independent dealer, who pays him his cash.

Tobacco is almost a sure money getter and many farmers in the Black Patch have bought homes since the association was formed without any cash and have paid for same. A tobacco factory is badly needed in Clarksville to use some of the large quantity of the weed grown in this section.

GOOD ROADS AND CORN CLUBS.

In the absence of Prof. Morgan, Chas. C. Gilbert, Assistant Secretary of the Nashville Board of Trade, was called to the platform and asked to address the Institute. Mr. Gilbert was introduced as the "Farmers' City Friend." Mr. Gilbert then delivered a short address, in part as follows:

Mr. President, Ladies and Gentlemen:

I consider it indeed an honor to be asked to address you twice during the same day, and I imagine some of you look upon such an occurrence with a good deal of amusement—a city man trying to say something instructive to the farmers of Middle Tennessee. There are always two kinds of people who teach, one by precept and the other by example. I want to say that I come under the former class. I am a "precept" teacher this time because I cannot teach by example, having left the farm when I was six years old.

This is an age of specialists, a day when the man with a hobby is the man who obtains results. I want to tell you tonight, my friends, that I have two distinct hobbies, yet they are so close akin that I feel

no hesitancy in closely linking them together. My hobbies are Good Roads and Boys' Corn Clubs.

I was just recently elected to the Legislature. My platform before election is my platform after my election, namely, Good Roads and Boys' Corn Clubs. There is today an awakening throughout the entire state in the good roads movement. It matters not in what direction you go, there is a healthy sentiment favorable to the building of good roads. The reason of this is, the farmers throughout the state have come to realize the necessity of better transportation facilities. They want to lessen the cost of hauling their products from the farm to the market place; and through the influence of the farmers rapid strides are being made in public road improvement in Tennessee.

I congratulate you on the stand you are taking for better roads, and I do not want to see the good work come to a stop. Friends, let's keep up the agitation until there will be a first-class road from every farm to the nearest town; let's so construct these roads that every county seat in Tennessee will be connected.

I must not dwell too long upon my first hobby—Good Roads. I must remember that this is a farmers' meeting, and that you came here to hear discussions along the lines you are most interested, so I shall discuss my second hobby—Boys' Corn Clubs. Tennessee is naturally a corn state. Her natural conditions are favorable to corn growing, and if the proper methods are adopted there is no reason why Tennessee cannot be the banner corn state in the Union. I know it is not worth while to talk to the farmer who is "set in his ways," but I want tonight to talk to the young farmers of Tennessee—the young men who see visions and dream dreams. I want to encourage them in the formation of Boys' Corn Clubs in every neighborhood in Tennessee. I want them to see visions of vast fields of growing corn; I want them to dream—day dreams, if you please—of an increased yield. I want to see the boys of Tennessee set examples for raising corn.

We all admire a hero. No matter how he has achieved his fame, whether in the political arena, whether in the business or professional world, whether on the diamond or in the athletic field, when a boy climbs the ladder of fame, we all want to rise up and do him honor. Young men, let me tell you tonight, the boy who can grow more corn on a given acreage, can break the record and win the prize, is a useful hero, and the time is not far distant when such a boy is going to receive a just and deserving applause.

I am not complaining or finding fault with the boys of Tennessee. Some of them have done splendidly; what we want is to get more of them interested in corn growing. When we get a few thousand boys applying modern and scientific methods in growing corn in Tennessee, the average yield per acre is going to be much larger than thirty-five and one-half bushels. I want to see the champion corn grower come from Tennessee, and from the records which have already been made I believe a Tennessee boy will some day be crowned the "King of Corn Growers" of the world.

In order to encourage the boys throughout the state to become

members of the Boys' Corn Clubs, I would like to see held in Nashville next December a great State Corn Show, where every farmer who desires can bring the best ears of corn from his farm and put them on display. That the boys may have sufficient inducement I want to see the next session of the Legislature make an appropriation of not less than ten thousand dollars to be offered as cash prizes to members of the Boys' Corn Clubs to be competed for at the State Corn Show. Just look what this would mean to the entire State of Tennessee. Thousands and thousands of boys would make an effort to win one or more of the prizes. The enthusiasm would spread from neighborhood to neighborhood until there would not only be more corn grown in Tennessee, but a better grade of corn would be grown.

When we speak of corn clubs and the growing of corn, oftentimes this can be taken in a broad sense, for the reason that the boy who can grow more corn per acre by reason of different methods can grow an increased yield of other farm products. This is not confined to the boys alone, for the reason that the girls of Tennessee are doing a splendid work under Miss Virginia Moore in forming Tomato Clubs and learning how to can the vegetables which are grown in abundance in every garden. This knowledge is a part of a girl's education and too much praise cannot be given those who are at the head of this movement.

In concluding this talk, I must say just a word in commendation of the work which is being done in the Agricultural Department under the leadership of Captain T. F. Peck. I have seen enough of his work to convince me that a state never had a better Commissioner of Agriculture than he, and if the farmers throughout Tennessee will cooperate with him I feel sure beneficial results will be obtained. It was my pleasure to be with him for a part of the time on the Agricultural Train, and I am an "eye witness" to what he is doing towards advancing the agricultural resources of Tennessee.

I want to thank you for the opportunity of addressing you and to ask that you get behind the movement to hold a State Corn Show in Tennessee in December and help make it the greatest corn show ever held. My best wishes are with the farmers of Tennessee, and I want them to know that I am really and truly "The Farmers' City Friend."

It was announced before adjournment that the Boys' Corn Clubs would meet in the hall of Representatives Wednesday morning at 9 o'clock. The Chairman also recommended that all who could possibly do so should hear Eli Haggard's lecture on "The Country Boy," which would be delivered before the institute at 10 o'clock Wednesday morning.

The convention then adjourned until Wednesday morning at 9 o'clock.

SECOND DAY—WEDNESDAY, DECEMBER 4, 1912.

The Middle Tennessee Farmers' Institute met in the hall of the House of Representatives at 10 o'clock, Wednesday morning, De-

cember 4, 1912, with President Sam N. Warren presiding, for the second day's proceedings.

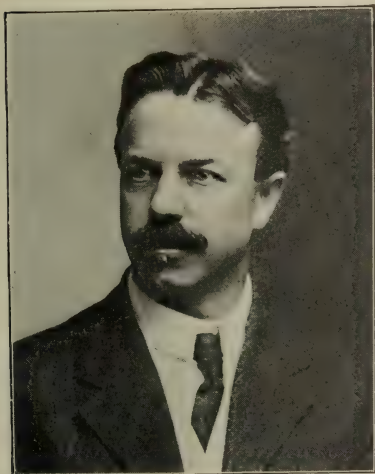
The invocation was offered by Rev. W. S. Clouse, of Nashville. A large number of delegates was in attendance on the morning session.

President Warren presented State Superintendent of Public Instruction J. W. Brister, who addressed the convention on "Some Needs of Country Schools."

Superintendent Brister's address follows:

SOME NEEDS OF COUNTRY SCHOOLS.

Mr. Chairman, and Members of the Middle Tennessee Farmers' Institute:



This is a great gathering and I am glad to participate in it. Not all of you are mere agriculturists, I presume, but a great majority are real farmers, who live in the country, are interested in its institutions and their development for your own and your children's sake.

There are many people who are interested in the country who do not live there. Their interest is real and vital, but it is not born of a knowledge of actual conditions, such as you, who dwell among them, possess. They can tell you what to do, but whether they could

do it themselves is questionable. "It were easier to tell twenty men what were good to be done than to be one of the twenty to follow our own instructions;" and continuing the words of the poet, "If to do were as easy as to know what were good to be done, chapels had been churches and poor men's cottages princes' palaces."

I am glad to have this opportunity of conferring with you on certain matters connected with our public schools. I need not apologize for discussing the school situation before you. As a great jurist remarked to me the other day, "After all, the work that you school men are doing is the most important in the state. No matter how great our natural resources may be, they will count for little without strong men and women to properly develop them; our children, indeed, are our greatest resources."

The judge voiced a sentiment which is universally accepted in theory, but a great many of our people act as if they did not really subscribe to it.

Our children are our greatest resources, potentially speaking; but it depends upon what we do for them whether they are to be resources actually. They may, if adequate educational opportunities are offered them, grow to be strong men and women, contributing to the development of the state; or, if denied them in their early life, they may become a positive hindrance to progress,

It depends, men, upon the opportunities that you give your children out in the country whether they will help develop the splendid resources of this great section, or whether they will become burdens to society and obstacles in the way of future progress.

Our public school system is not what it ought to be, but if the benefits of education are to come within the reach of all the people, it must be through the public schools. We cannot subscribe to the wholesale denunciation of our public school system which certain sensational writers are making these latter days. Indeed, we resent it because many of the charges are unfounded; and, further, because of the tendency of this destructive criticism to undermine the foundation which we have already laid in public school work and prevent its proper development. Our public schools, especially in Tennessee and the South, are just getting into the confidence of the people. It is true that we have had a public school system for many years, long before the Civil War, but it had not grown to be a strong, dependable institution until within comparatively recent years. The educational awakening in this section of the country which centers in the public school began not more than ten or fifteen years ago. To harshly criticise this public school system at this date, to destroy the confidence of the people which it is rapidly gaining, is worse than criminal.

But even the friends of the public schools readily admit their weaknesses and defects, and welcome any constructive criticisms that may be made. Our system in Tennessee is far from perfect. It does not approximate our ideal of what it ought to be. With so much illiteracy in the state, with lawlessness prevalent in many sections, with the spirit of irreverence which seems to characterize the young generation of our own time, no man can claim real success for the public school, for the school is largely responsible for these conditions; and until these ills are remedied we must charge the public schools of this state, and every other state, with serious and fatal defects. And then again, the artificiality of the public schools, their aloofness from life, their lack of vital relationship to their environment, must be recognized as real and serious defects. As has been urged again and again, it does not teach our boys to make a living or our girls to make a home; in other words, the schools are not giving a certain type of vocational training which the times demand.

In acknowledging these defects in our public school system, however, we must remember that only recently have the schools been expected to give this kind of training. The fact is, society has expected other institutions, principally at home, to do this work, and the preparation for vocational life has been left to individual initiative. Since the public school system of America was created; yes, within the last twenty or twenty-five years, wonderful changes have taken place—economical, industrial and social. New demands have been created, and there has been a transference of functions from one institution to another, and in the transition the demands upon the school have multiplied. The schools have heroically endeavored to respond, but it must be remembered that it takes time for them to become adjusted to new conditions and to properly perform the new functions.

Again, it must be remembered that in making these new demands upon the school, society has not taken account of the greater cost of

the new type of instruction. The training of the hand is more expensive than the mental discipline which the schools have been expected to give.

To teach Latin or mathematics, all that is necessary is to engage the teacher, and he comes with his knowledge and his book, which is the total equipment required; but when work in science is demanded, a laboratory is needed; and when agriculture and home economics are put in the course of study, other equipment in addition to the laboratory is called for—farms, teams, supplies, utensils—and these things cost.

However, we recognize the justice of these new demands, and the schools are endeavoring to supply them as rapidly as possible, and there are indications that the response is not altogether ineffective. Especially for the country do we need to build up a new type of institution; agriculture, domestic science, sanitation and hygiene and kindred subjects must find a place in the curriculum of all our country schools. We do not mean to discredit the necessary conventional subjects which are now being taught, but we want to vitalize and rationalize the educational process by correlating with the old studies certain new subjects of instruction, which will relate the school more intimately to the life of the people, and will so equip its pupils that they can go from the activities of the schoolroom into the ordinary activities of life without loss of time, energy or effort.

In this presence I may suggest a few facts which must be understood before we can hope to have the right kind of schools out in the country.

First, the country school, as many people are urging at the present time, must be made by the farmers themselves. We need not look for outside aid, we need not expect men in other sections to tell us just what we need or how we are going to get it. We know our own conditions better than other people can know them. We know our resources and our needs. It is for us to decide that we are able to do the thing and to resolve to put into it the thought and energy and capital that are necessary to bring about the desired result.

In the second place, the school must touch the whole life of its community; it must be a social center; it must be a place for public meetings; it must offer a course of instruction for adults; and the work which is laid out for the pupils themselves must be carried on not exclusively at school, but must be continued in the homes. Not merely home study is here referred to, but home activity growing out of principles inculcated at school, applied at school so far as the limited resources permit, but with further and completer demonstration by the pupils on their fathers' farms or in their mothers' homes.

Again, our schools must make contribution to the industrial and economic life of their communities, as well as to the intellectual life. Our attitude must not be that of continually asking the people for support, moral and financial, but our constant aim and purpose should be to give something to the people. The best way, I believe, for the schools to secure the necessary finances for developing their work is to show to the people that they are making wise use of what they have, by making contribution to the life about them.

Let me say further that the school as it exists today contains the germ of the institution that we must finally have. It has within it the

spark of vital power which can be kindled into a flame. It is not an entirely new institution that must be created, but the school of the future must be evolved from that which now exists.

I am happy to report, my friends, that progress is being made in our school work in Tennessee and that the future is bright and promising. If we can retain your confidence, if you will intelligently co-operate with us, we are sure of doing what we want to do and giving you what you ought to have. Let me encourage you by saying that reports recently compiled in my office show reasonable improvement in enrollment and attendance in all our schools, show a gratifying increase in school revenues, show a steady, if slow, advance in teachers' salaries; they show that the elementary school tax in the last biennial period has been raised in eighteen counties, and that only ten counties in the state now levy less than the 40 cents elementary school tax, a \$2 poll tax and all the privilege taxes for schools permitted by law. They show that seven counties have levied high school taxes within the present biennial period, that there are now forty-five counties with 114 high schools, 37 of them being of the first class.

We have information to the effect that committees have been appointed by various county boards to consider the high school question, and that in many counties within the next few months we can expect their establishment. The records show also that six counties have issued bonds for school building and equipment, ranging from \$8,000 to \$200,000; that the agitation in favor of centralization of country schools, with provision for transportation facilities, has not been without results.

Three counties during this period, following the lead of Shelby and Madison, have begun the experiment of using school wagons—Weakley, Cheatham and Rhea—and from all of them come the gratifying report that they are meeting with public favor. Other counties are interested in the movement, and the indications are that within the next few years the centralized school with all its possibilities will be established in most of the counties of Tennessee. The reports show that the question of more intelligent supervision of country schools is receiving due consideration, that five counties—Knox, Bradley, Madison, Davidson and Shelby—have within the last few months made provision for it.

I may say right here that every county in the state ought to have at an early date a genuinely competent supervisor of industrial work who can organize clubs of various types among the pupils of the various schools. This industrial work is finding its place in the schools of the state, although no appropriation has been made for it by the state. Progressive school officials see its need and recognize its worth and are making serious endeavor to put it within the reach of their pupils. County superintendents, with the aid of expert demonstrators, have organized corn clubs among the boys, and their success has astonished the whole state.

With scarcely an additional penny of public revenue, this work has been carried on, and the boys in various parts of Tennessee have demonstrated their ability to raise two and three and sometimes four times as much corn per acre as the average farmer in the state. Miss Virginia P. Moore, whose salary is paid by the United States Agri-

cultural Department and the Southern Education Board, has inaugurated this year the canning and poultry club movement among the girls, and her work has attracted universal attention.

If we have been able to do these things without resources and with dependence largely upon outside officials, who of us can estimate what results may be secured if we will enter upon it vigorously and systematically? The State of Tennessee and various counties therein cannot afford to depend upon the United States Government to furnish the stimulus and supervision for this work: if we want to make it go and get the best out of it for Tennessee the various counties must make some financial provision for carrying it on.

I hope you men will go back to your counties and insist that the county authorities shall make provision for supervisors of this work, for organizers of corn clubs and tomato clubs. I ask this of you with boldness and with confidence, because I believe that successful development of such agencies will thoroughly vitalize our public schools and at the same time will result in economic and industrial benefit to the state.

The exhibits which have been made by the boys and girls of Tennessee at various county fairs have far surpassed our expectations: in many counties—Giles, Wilson, Lawrence, Benton, Hamilton, Bradley, Carroll—and others, too numerous to mention, have been creditable to the school people and to the enterprise and zeal of school children. The County School Fair, which was held in Montgomery County in November, was an object lesson to the whole state. All of these evidences of industrial activity on the part of our school people are encouraging. Whatever stimulates industrial activity on the part of boys and girls, at home or at schools, is commendable, and deserves to be incorporated into our school work.

Now, gentlemen, we are in a transition period educationally; it doth not yet appear what the country school of the future is going to be; but when it is worked out it will be a group of activities and not a mere program of recitations: it will reach all of the activities of the neighborhood by participation in them, growing out of them, functioning for them and stimulating them; it will give to the country boy opportunities which will put money in his pocket, it will make his home and community life productive and attractive as well: it will set up before him ideals of service and usefulness which will show him how he can help himself, and at the same time make contribution to the development of his county and state; it will get a grip on his life, his interests and affections, and will make out of him the strong, vigorous man that the state, in these troublous times, so much needs. It will help the country girl to make a home, to beautify and adorn it; it will give her a knowledge and a power that will enable her to solve the many problems peculiar to her life, and show her that in the country upon the farm is a possibility of as large and beautiful and useful a life as can anywhere else be found. This country school, set upon a hill overlooking fertile fields, or planted down in a smiling valley, with sufficient acreage for playgrounds and for all the necessary industrial activities, with comfortable, convenient and sanitary physical

surroundings, taught by sympathetic, educated and professionally trained teachers, with competent and intelligent supervision of its work, financed by a grateful and appreciative people, will bring untold benefits to your boys and girls and will effectively aid in the development of the state.

Several speakers on the program for the morning were absent, but others were substituted, including Eli Haggard, the well-known lecturer, who for more than an hour entertained a crowded house with his delightful lecture, "The Country Boy."

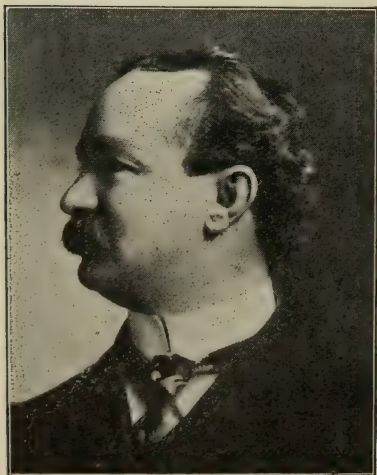
Mr. Haggard kept his audience in a good humor, and no number on the program was better enjoyed. The lecture being copyrighted, the Secretary of the Institute could not secure it for publication. At the conclusion of his lecture Mr. Haggard was given a rising vote of thanks.

NEED OF COUNTY INSTITUTES.

The President presented Mr. H. K. Bryson, of Fayetteville, who addressed the convention on the "Need of County Institutes." He referred most encouragingly to the movement, and said there were many things of value to be learned at these meetings of the farmers. He had himself learned, he said, from a boy present at this meeting how to grow corn; he had learned from a little girl how to grow and can tomatoes, and from a club of Cumberland County boys how to grow potatoes and sell them at a profit.

Mr. Bryson's address follows:

NEED OF COUNTY INSTITUTES.



The time has come when specific education for the farmer is necessary. In past years it was not considered essential for a man who was to make his living on the farm to have an education, but conditions have changed. Many of our farmers have neglected their education, and very few have made a study of farming and farm work. Farming is a science, and as so many of us have not had an opportunity to study it, what is the next best thing for us to do? We are forced to compete with men who have made it a study, enlightened by experience and experiments of men who have made it a study, with ample

means to test the value of their experiments.

The answer to the foregoing question is *organization*. How is this practical? For some years a school has been conducted for our Middle Tennessee counties once a year, and has been of untold advantage; those of us who have enjoyed these institutes are well aware of what has been done for the promotion of good farming, and realizing this, the question very naturally arises, How much more good could be accomplished should every county hold an institute of its own?

When we consider the old story of the cost of shoeing a horse, when the price of driving the first nail is one penny, and doubled for every nail until thirty-two nails have been driven, making the price of shoeing a horse exceed a million dollars, the fact that for the past one hundred years the population of the United States has doubled every twenty-five years, will in the same ratio of increase in the next fifty years give us a population equal to that of China. We should consider, then, the preparation of ourselves and our children for the emergency. I know of no better way than to give our children a practical as well as, if not instead of, a literary education. The emergency is now on for the present generation, and it should bestir itself. The first thing that suggests itself to my mind is to form county institutes, that we may take advantage of the good things now being offered.

Both the Government and the State are spending large sums of money to furnish information to the farmers that is the result of the experience of practical men. These should be studied and discussed in these meetings. True, these bulletins are largely distributed and sometimes read, but from lack of association and discussion too few are ever put into practice.

The advanced steps already taken in scientific farming have had their origin from the teachings of the experiment stations, and drilled into the farmers through their State meetings, but it is possible for so small a per cent of our farmers to attend these meetings that progress is slow. How much better progress could be made should the farmers of each county form a county institute and enjoy these same advantages?

Suppose, for instance, every county in the State should convert its county poor house into an experiment station, place the same under the direct management of some intelligent and practical farmer, have the county to furnish the heavy labor by its county convicts, or a sufficient force of them as might be needed, let the unfortunate inmates of the poor house do such light work as they were able to do, change the name from "poor house" to "county experiment station," take away the loathsome name and substitute an inviting one, let the county institute meet there once a month, or as often as is deemed expedient; see and know the result of their own experiments; have the work done by the oversight and general direction of the State Experiment Station, and I believe a two-fold advantage would accrue—namely, the teaching of the farmers, and the betterment of the county poor.

But time would fail me to enumerate the advantages of these county institutes. Let us make the trial; let the Commissioner of Agriculture

help us by stating that transportation to the next State meeting will only be given to those who are members of county institutes.

The President then introduced to the convention Mrs. Rutledge Smith, of Cookeville, Tenn., who addressed the delegates on "Practical Ideals."

The address of Mrs. Smith follows:

PRACTICAL IDEALS.

There seems to have been just a little "mix up" as to what I should talk about this morning. It was first suggested that I picture in words "The Ideal Farmer's Wife." Now, as a believer in the golden rule, "Do unto others as you would have them do unto you," I would never describe to a man already married, an ideal wife. So, Mrs. Farmer, you owe me one—I have refused to portray to your husband the wife ideal. However, I can say the ideal wife is but the reflection of the ideal husband.

It was then suggested that "Practical Ideals" might be a subject that would open up an opportunity to describe the ideal wife as a practical woman, and just as I had put on my thinging cap to enumerate the ideals that are practical in small towns and farms, comes the announcement in the paper that I shall tell of the "Relation of the City Woman to the Country Woman." This was a subject that appealed to me at once, although my twelve-year-old boy had some doubt about it, wanting to know which I was considered—a country woman or a city woman? He evidently felt it a reflection on Cookeville, my home town, if I was called a country woman, and yet he resented the fact that our home place should not be recognized as a farm. I satisfied him by saying that you did not consider me exactly a missing link, but a connecting link.

Seriously, this relationship of country and city woman should be more thoughtfully considered by all. Too often you hear a town woman say she has no friends among the country people, that she doesn't even know where her butter woman lives. Shame on such a woman. Let her ponder the words of William Jennings Bryan, the words that set the world to thinking sixteen years ago and gave to the United States this fall a Democratic President: "Burn down your cities and leave your farms, and your cities will spring up again like magic; destroy your farms, and grass will grow in the streets of every city in this land."

The city woman is not necessary to the country woman, but the country woman is absolutely necessary to the existence of the city woman. Without the country woman there could be no city woman.

Recently, discussing this subject of relationship of country woman and town woman, with a friend of mine from the country, she said that the "town women should not think themselves so much above the good women from the country; they should be more friendly." That was a woman who averaged coming to our town once a week, and yet she admitted she had a limited acquaintance among the town people. Now I consider her to blame. She had an opportunity to seek and

know the town women, but she did not. I do not believe a town woman would have passed her house once a week for years and not known her and had something to say. The country woman must learn her own true worth and value, and in learning it herself she will teach others. I can't say, however, that the fault is all that of the woman from the country. Hospitality is a virtue too often lacking in town. This should be overcome, and an ideal way of overcoming this, a practical way, is to provide a rest room in every town for the women who come buying or selling.

As a city woman, I know it is not always convenient to invite a friend to come to my home without some extra preparation or inconvenience to other members of the household. As a country woman, I know how glad I am to drop in to a rest room in one of the large department stores when I am doing a day's shopping in the city. So I would beg every town in the state to provide these rest rooms for their women from the country.

A man and his wife come to town. He has many acquaintances and much business; he stays the entire day, never realizing that time is hanging heavy on his wife, who perhaps has been compelled to bring her baby, and maybe two or three other small children. The children get tired and restless; the stores are filled with people; no place to sit down and rest; no couch on which to lay the sleeping child and rest her tired arms. 'Tis like a horrible nightmare, and the result is next time the woman chooses to stay at home with the children, and thus the habit of staying at home is formed, and a life that might have been made brighter by congenial acquaintance met in a town rest room is dragged out merely as an existence.

Let me picture to you an ideal rest room, a practical ideal (for that was the subject finally assigned to me). The county court, as we all know, is made up mostly of country squires, and it should be easy enough to persuade them to appropriate the best room of the large new courthouse for this rest room, and thus give the town women a place to make inviting for all country friends. What a delight it would be for the philanthropic club woman to fit up and furnish this room. One woman gets out that little crib, dear with cherished memories, touches up the worn spots with varnish, places its snug little mattress in it, fits the cases on the little pillows, and wonders about the future of the many baby heads that will rest upon them, while lingeringly she dreams of the "cooing voice" long since hushed or grown into a man's strong bass, and of the baby arms that use to reach out to her when she bent fondly over her own darling. Ah, that crib would be hallowed with a mother's prayer, and sweet should be the infantile dreams of those who would rest therein, while a tired mother sat nearby, in a comfortable rocking chair, sent by some other woman, who had known the sweet of rest after a harassing day of shopping or waiting for a man.

How this same mother revels in the magazines on the table near, and for an hour she is oblivious of all time. Her mind is resting as

well as her body and her baby, and she gives no thought to the cow to be milked after dark, nor wonders if the right hen will go into the right coop. She learns from experience that this hour spent in rest is as much to her as a tonic. She finds that the old cow stands as quietly after dark as before, and that the mother hen has managed her chickens all right, and the little ones left appreciate mother more upon her return, and she herself is less tired than after sitting at home all day alone.

The drive with her husband has brought them nearer in their work; they have had time for an interchange of ideas and a social chat. She tells of the magazines found in the rest room, the lovely little cribs, the old friends she had met there, who were in town for a day's shopping; she tells of the new friends she made, and how all had planned to meet there again the first Monday and organize themselves into "The Country Woman's Club," when they would discuss the Home-maker's Section, the Tomato Canning Club, and the Country Woman's Christian Temperance Union. Each was to bring some light lunch, and as the ladies of the town had provided knives and forks and dishes for the rest room, they would have a regular picnic after they had finished their shopping, and he need worry no longer about her getting tired of waiting.

If her old complaint should come up and she feel badly, she could lie down, for there were nice clean cots and a lounge. The club women took week about seeing that the room was kept clean, and a sign read, "If the dishes are used, please wash and put in place." The ladies would have liked to have provided a maid, but were not financially able. The janitor of the courthouse made the fires and once a week swept and dusted.

Now isn't that a practical ideal? And isn't every woman in the state entitled to a rest room in town? And is there one that would not enjoy it? I have an old lady friend, one of the dearest and best of well to do farm women, and I was dumfounded when she told me that she sometimes let eight months go without going to town. She lived only eight miles from the county seat, had the best horses in that section, but the roads were bad and it was a tiresome journey. From a glance at her "spare room" I knew she had a hankering after pretty things, as do all women, for on the floor was matting, an organ in one corner, good paper on the walls, and enlarged portraits—she liked nice things as well as her town sister, but bad roads kept her from town and her neighbors from visiting—that was five years ago in our county. Today she comes to town in her wagon in a short time, does her marketing, visits her town friends, and gets home in time to get supper. That is an ideal life made practical by good roads.

I love the country, and nothing is more delightful to me than a visit to a big farm, and whenever the opportunity offers to make these visits I seize it if possible. But I remember when my first baby was small, how I use to refuse to go to the country to spend the night, for fear the child should have croup, and I, inexperienced, not knowing

what to do, and to get a doctor meant to send a messenger on horse-back and waiting for him to return before you could know whether the physician was at home or not. What a wait it must be. Minutes must seem hours to the parents watching the labored breathing of a little one suffering from croup, while waiting for relief. That is now a thing of the past. A telephone, a practical ideal, has been placed in all well regulated farm houses, and the farmer is not only in close communion with his family physician but with his neighbors.

Another ideal, made a practical ideal by the state, is the Home Library. The farmer and his wife have very likely grown up in a time when books were more scarce than now, and while they desire to have their children read the best literature, they realize their inability to select books, and often do without, because they do not know what to buy. This need not be so any longer. The farmer has but to write to the Secretary of the Free Library Commission, that two of his neighbors and himself wish to have a library for their children, and straightway comes a box of choice books, chosen with a view to the kind they need or would enjoy, and for six months these three families revel and delight in this library of fifty books, not only being benefited from the books themselves, but it affords a social center and the young folks change and interchange ideas, an ideal country library, a practical ideal, because the books can be returned after three or six months and others sent. The subjects range from Agriculture and Domestic Science down to the most standard fiction. The state has ideals—it remains for the farmers to make them practical.

The ideal school and school house is another ideal we hear much about. But they are not always practical ideals. Every neighborhood has some citizen who is known for his enterprise and ambition, with others not quite so ambitious. The ambitious citizen wishes to have a first-class school. A meeting is called, they all get together, talk, discuss and plan, adjourn to meet again; talk, plan and discuss, and so on until the children are about grown, and the enterprising citizen has to send his girl or boy off to school for a year or two, which costs him a sum of money that is a small fortune to the average farmer, and his neighborhood still has no school. Suppose that same citizen with the others had guaranteed some good, all round teacher a substantial salary to come into that neighborhood and build up a first-class school. Not one, but all, of his children would have benefited by the money spent, and the neighborhood would have had a thriving school, a monument to his enterprise and an inspiration to his neighbors to educate their boys and girls, and each citizen could have shared the expense of the school according to his means and not according to the number of his children. An ideal neighborhood school, a practical ideal.

Too often the ideal country home is pictured as a large one, roomy and wide, with its flower gardens, its cellars, its barns bursting with grain, its lowing kine, its blooded stock, and its waterworks and acetylene gas—that is an ideal home outwardly. But it is not a practical ideal, for “the poor ye have with you always,” and if the average farmer waited to realize that ideal before he could feel he had an

ideal home, there would be few who had that feeling. Let me describe to you an ideal home, a practical ideal. It may be only an acre of ground, if you can afford no more, but let its fences be well kept, the weeds be missing, and each square inch of dirt yielding of its utmost capacity; the house may have only two rooms, one within which to live and sleep, another within which to cook and eat; but there must be a thrifty housewife to keep clean the hearth and bright the fire of the living room. Here must be found hospitality and love and a genial air of comradeship between parents and children. In the winter, the nuts of the woods, stored as the squirrels store them, may be offered the friendly visitor. Books can be had for the asking, poverty being no longer an excuse for the absence of books. The state and free libraries supply them for the asking. In the summer the evenings may be spent in front of the threshold, under the light of the stars, body resting from a day's work, mind busy with plans of tomorrow; the vine near the door speaks of a love for the beautiful, and the gourd near the spring tells of a helping spirit, while a willing hand and a bright word make a practical woman ever an ideal one.

'Tis not the overloaded table that speaks the loudest of hospitality. Hospitality is felt, not tasted. In this day of domestic science and good farm papers filled with wholesome recipes and advice, there is no excuse for any young woman not knowing how to prepare a meal ideally good, practically so. The time of teaching only the fundamental rules of reading, writing and arithmetic is a thing of the past. Our State Superintendent of Public Instruction has been steadily studying the needs of the school children, until nearly every county now has its high school and the boy or girl who graduates therefrom has a good substantial education. A certain county, with which I am familiar, recently appropriated \$20,000.00 to build a jail. This county is one that has no high school, and I firmly believe if ten years ago \$20,000.00 had been appropriated for building a county high school, there would today be no need of a jail.

There is one ideal that appeals to me as being most practical, requiring every school in the state to teach a course in wholesome cooking and in caring for the sick, a Domestic Science course and a course in Trained Nursing. In our schools we find girls laboring with scientific studies, historical researches, and geometrical problems, when it would be much more practical to teach these girls how to make good biscuit, broil a piece of bacon, or make more comfortable the sick, or bandage a sore finger. Ideals these are, but most practical, and when the girls of our state are taught more thoroughly the art of keeping a kitchen clean and making bread more skilfully, then will domestic service be placed on a higher plane, and the girls of the mountain section, who now hire for seventy-five cents a week and their board, will be worthy of greater hire and a means of making a living, other than going into factories, be placed in their reach. An education is a great asset, but it must be practical, and this our farmers have realized in establishing schools of agriculture for the boys. But what about your girls? Will piano playing teach your daughter-in-law to

get a good dinner? As you expect your daughter-in-law to be, so prepare your girl to be some other man's daughter-in-law. It is well enough for a woman to be a good musician and speak fluently several languages, but the sick child cannot be made well by music, nor the hungry boy fed on syntax. Neither can all educated girls become teachers. Please do not think for a moment that I am not an advocate of education, for that has always been my hobby, and I believe the educated man or woman, who is practical, is the best equipped of all soldiers in this battle of life.

Practical ideals! I wish I had the time to remind you of the ideals that were once thought to be only the dreams of some madman, but which have become ideals realized and proved to be, after all, only practical common sense. But there is an ideal which I am sure all of you will agree with me in wishing to see realized—an ideal Home-Makers' Section. The very name home-maker is ideal, and yet is there anything more practical than making a home? Each year the farmers of this section of the state gather here and give of their experience and learn of others. It is looked upon as a holiday, like unto the harvest festivals of old Rome, and anticipated from year to year. Then why not bring the wife along, the helpmeet, and let the Home-Makers' Section be composed of the best and most worthy women of the state, women who know whereof they speak, women who have made nature's big, open book their principal study, and let them give their theories of butter-making and chicken raising; theories that have been gathered from practical experience, and thus by their presence and timely words of wisdom make an ideal Home-Makers' Section a practical ideal.

The convention then adjourned until 1:30 o'clock in the afternoon.

AFTERNOON SESSION.

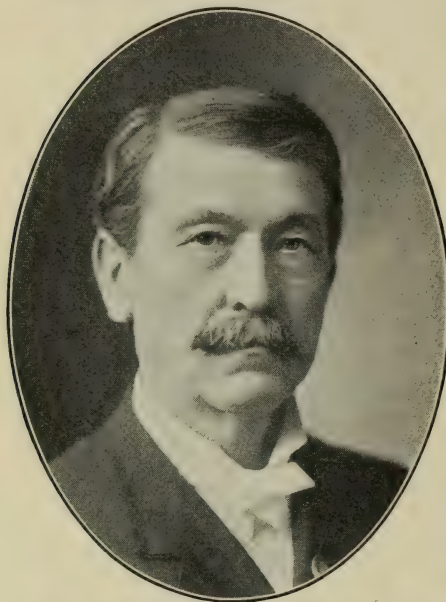
The convention was called to order at 1:30 o'clock by President Warren.

The feature of the afternoon session was a paper prepared by Col. Robert Gates, Land and Industrial Agent of the Louisville & Nashville Railroad. Col. Gates is and has been for many years the leading spirit of the farmers' institutes in Tennessee. He was present and sat on the rostrum with the President, but on account of ill health he was unable to deliver his address himself. It was read by Dorsey Hudson, of the Nashville, Chattanooga & St. Louis Railway, and brought forth frequent applause by its timely advice to farmers and its brilliant ideas as to improved methods in agriculture.

Col. Gates' address follows:

A PLEA FOR RAILROADS.

Ladies and Gentlemen:



I feel like addressing you as brothers and sisters, for I have been, theoretically, a farmer for forty years, and practically one for the past ten years. I come of a race of farmers on both parental lines, running back into old Virginia of glorious history.

As somewhat a student of history, I have been impressed with the fact that the farming class is the chief reliance of stable popular government within safe and sane limits, and this truth I have presented with tongue and pen for many years, especially before farmers' institutes. It is based upon the comparative conservatism, independence, and ingrained patriotism of the farming body. It is with this

conviction that I come to you farmers today with a plea for the railroads, being sorely pressed, as they are, between the upper and nether millstone of organized industries and organized commerce on the one hand, and labor unions and railroad brotherhoods, on the other; the one demanding reduced freight rates and excessive regulation, and the other demanding higher wages, shorter hours, and restrictive regulative laws. To this is added state and national commissions clothed with well-nigh unlimited power, and with ears wide open to complaints, and more than half closed to the defendants. Worse still, the politicians, big and little, ever ready to run with the wind and tide, recklessly appealing to ignorant and selfish prejudices with exaggerations and proposed drastic legislation,—these forces dominate the situation.

This country, with its marvelous possibilities, is passing through a period of radicalism. The spirit of conservatism is submerged and impotent. It is degrees of radicalism only that is exploited, and the corporations are the chief objects of attack.

But I speak only of the railroads. There are but two ways that railroads can be operated, i. e., as corporations, quasi public, or under government ownership. They must have continuous life in order to perform their public duties. This alternative is inevitable. It is corporations under reasonable control, protecting the public from discrimination in favor of big industries and powerful commercial bodies, as every big city has; or it is government ownership, political operation like the postoffice department and our enormous pension system, both of which are exploited for party ends.

What government ownership would mean for this country at large, with its socialistic stride and propaganda, may well shock those who believe in personal liberty, regulated by laws enacted by the representatives of the people, what it may mean for the Southern States, with their perilous race problem, is absolutely appalling. There would be no peace, no progress, but bitter political agitation and probably anarchy, throughout the South, which would affect the whole country disastrously. This dire result is the inevitable end of excessive regulation, state and national. To this end political factionalism and demagoguery is steering. To this end labor unions are headed. To this end railroad brotherhoods, possibly unconsciously, are drifting, seemingly reckless of the good thing in hand, in efforts to grasp things imagined to be better, loading their own camel with the last feather, wringing the neck of their own goose that lays the desired eggs for them.

In this alarming situation, thoughtful patriots turn to the farmers of the land for safety—for relief from political factionalism run mad, and reckless demagoguery; for protection from organized greed on the one hand, and organized labor on the other; for harking the public mind back, not from lines of political, educational, and material progress, but from lines of radicalism and reckless agitation, to the well-defined highways of healthy, peaceful progress and development.

I think I know what the answer will be from the farmers of Tennessee. In fact, that answer is already made. For in no uncertain terms have the farmers of Tennessee spoken through their institutes for legislation and exploitation that will deal equitably and beneficially with all legitimate interests. This is as it should be. In this connection, it is a significant fact that there has been no trouble in Tennessee for many years between the people and the railroads. Wild agitation and drastic legislation have raged all around us, producing only crops of lawsuits and demagogues at heavy cost to the taxpayer. Tennessee, despite hot politics all these years, has had industrial peace, and made progress, especially on agricultural and educational lines. And the railroads have been especially active and liberal in increasing mileage, improving the service, and inspiring cooperation in all efforts of improvement, especially agricultural and educational. The railroads have invested and are investing many millions in new lines and improved facilities and development of resources. In East Tennessee, the Southern Road has extended its system in many directions, opening up new fields for enterprise and capital. The Louisville & Nashville road has built hundreds of miles of new road in that part of the state, opening the way for mining, manufacturing, and milling enterprises. In Middle Tennessee, the L. & N. is practically double tracking its system, while it has extended its branch system to phosphate mines, opening up new territory and increasing transportation service. The Nashville, Chattanooga & St. Louis road has extended some of its branches into new fields of enterprise, and improved its general system and service. In West Tennessee a road has been built from Dyersburg via Tiptonville, to Hickman, Ky. Another from Dyersburg, Tennessee, to Jackson, Tennessee, and

another new line is soon to be built from Middleton, via Jackson or Lexington, to connect with the Nashville, Chattanooga & St. Louis, to Paducah, making a new line from Chicago to the Gulf. The I. C. has practically treble-tracked its system through West Tennessee, and made connection direct from Jackson, through Birmingham, to the Atlantic Coast. All this has added millions of dollars to the taxable wealth of the state, stimulated enterprise, kept alive the spirit of progress under the depressing political conditions, thus adding benefit upon benefit to the general public. The railroads have also co-operated with our schools and our fairs by giving special rates for exhibits and visitors. They have cooperated liberally from the beginning with these Farmers' Institutes, and may be justly termed one of the parents of this great agricultural enterprise. The railroads furnished and operated exhibit, demonstration, and educational, agricultural, horticultural, and stock trains, free of charge to the Agricultural Department of the state, which, equipping the same, recently traversed the entire state, teaching the farmers by object lessons and expert lectures improved methods of farm, truck, and fruit growing, and stock breeding and feeding, blending the scientific and practical in concrete lessons. The cooperation has been liberal, broad, and continuous for fourteen years, and has done very much towards stimulating, elevating and advancing the farming interests generally. The farmers, I know, appreciate this cooperation, and stand ready to reciprocate along proper lines.

Does this liberality and enterprise, replete with encouragement and large practical benefits, call for further excessive regulation, or for drastic legislation that will add millions to the cost of operation, without benefits to any class or interests, except the demagogues and the organized agitators? It is this I call upon you to consider as a jury of patriots, interested in justice to all and special favors to none.

The next legislature will be an important one, not only politically, but industrially. The politicians will be there in force, proclaiming their devotion to the people and bent on saving the country—and the offices; the cities and towns that desire special legislation will be there in force; industrial enterprises will be there through able representatives; the labor unions and railroad brotherhoods will be there, represented by their chosen leaders—each and all demanding special legislation and special favors. The public service corporations, including the railroads, on the defensive strictly, especially the railroads, will be there, of imperative necessity, and in obedience to the common law right of self defense. The farmers will also be there as representatives in the legislative body, asking nothing for their great interests except for the general good, and in position to hold the scales evenly balanced between clamoring interests. Some good and much bad legislation will be attempted, and some will be enacted. "God help the people."

For the railroads, I submit that the limit of burdens, through excessive regulation, state and national, and of taxation, direct and indirect, and of cost of operation, due to increased wages, shorter hours, classifications and restricted service, etc., has been reached. A halt on these lines must be had, or the public suffer impaired service and

conveniences, which may add danger to life and limb, to say nothing of probably bankruptcy, especially of local lines; and over all hover the dark shadows of government ownership, political party operation and exploitation, and socialism magnifying government and dwarfing manhood.

If it were my last word to the farmers of Tennessee, I would emphasize the warning herein given in the name of wholesome enterprise and progress, in the name of schools, public and private, in behalf of agricultural advancement, now so encouragingly under way, and in the name of, and on behalf of the Farmers' Institutes, which have done, and are doing more to uplift the farmers to higher planes and advance and dignify the calling of agriculture than any movement yet devised.

Immediately following the delivery of the above address, the following resolution was introduced by Mr. W. H. Forrester, and seconded by a number of other farmers, and unanimously adopted by the institute:

"RESOLVED, By this institute of farmers, men and women, that we thank Col. Gates for his timely address and warning, that we commend the same to our brothers and sisters throughout the state, and especially to the serious consideration of our representatives in the Legislature of the state, soon to assemble, to the end that no drastic legislation affecting railroad interests be enacted, burdening or crippling these chief agents of progress and prosperity now so liberally cooperating with all the forces of development, and especially with the great and growing and more vital agricultural interests of the state."

PREVENTABLE LOSSES ON THE FARM.

Prof. G. M. Bentley, State Entomologist, University of Tennessee, Knoxville, was introduced by the President, and addressed the convention on "Preventable Losses on the Farm."

Prof. Bentley's address follows:



None of the changes modern civilization has made upon the earth are more evident to the American farmer than that of the increased difficulty of saving his crops from the ravages of noxious insects and parasitic diseases. Many of us have heard from our fathers and grandfathers of the apples which once grew in yards and along highways, strangers alike to the codling moth, maggot or scab; of the luscious peaches free from worms or rot; of the plum unmarked by the curculio, and the pears that had yet to learn the secret of becoming dwarfed, gnarly and cracked; of the grapes that

knew not how to rot, and the potatoes whose leaves had neither been blighted nor bitten by the Colorado beetle. Now, all is changed, every crop has foes that often gather the lion's share of the harvest. These enemies have come from the North and the South, the East and the West; from Europe and the islands of the sea, and in our own midst they have flocked from the forest to the field, deserting a wild plant for its cultivated relative, or changing their habits to conform to a new environment.

This increase of noxious insects, however, is the natural results of the condition of things. Among the principal factors tending toward it may be mentioned: First, the massing of crops in limited areas; second, to the facilities for transporting insects long distances by vessels and railways carrying agricultural products; third, the abandoned farms and orchards that serve as breeding places for insects; and fourth, the destruction of forests and the cultivation of the prairies.

We are indebted to our commerce on the sea and on the land for many of the most noxious insects brought to our shores from Europe, Asia or Australia by ships. Many of these insects have found the land which for them was flowing with milk and honey and in which their hereditary enemies have not yet gained a foothold; consequently they have multiplied without let or hindrance and by the natural and artificial means—notably the railroad trains—they have rapidly overrun the country of their adoption.

The abandoned or neglected fields or orchards all over the United States have proven a prolific breeding ground for many insect pests. Too often the efforts of painstaking farmers have been of little value due to the proximity of such close infection. An orchard that has outlived its usefulness had better be converted into firewood than left to die uncared for.

The destruction of forests has compelled certain insects to resort to cultivated crops for subsistence, and in some cases a decided change in feeding habits has resulted. So also the bringing of the prairies into cultivation has caused many insects which originally fed on wild grasses to resort to pastures and meadow lands. The operation of these various causes, together with the enormous powers of multiplication, have led to the constantly increasing injury to cultivated crops, until today these tiny foes exact the tribute of ten per cent of the crop-products of the American agriculturist. "They form an omnipresent host of tax gatherers taking possession of the farmers' crops and forcing their onerous demands without process of law, unless preventable measures are vigorously prosecuted. They are no respecters of persons. Like the rain, they fall on the fields of the just and the unjust."

Insects devour our crops, carry disease, annoy us when awake, prey upon us when we sleep; injure or destroy our stock, infest our orchards, and in some communities white ants do much damage to dwellings.

The damage to our American crops has been estimated at the enormous sum of \$1,000,000,000 per year, but when we remember that insects are also dangerous to health and life, how much more is

the number of injurious insects to be deprecated. Mosquitoes help to propagate and are also certain and exclusive disseminating agents of malaria, yellow fever, and other diseases. House flies aid in the spread of typhoid fever, summer trouble of children and other diseases. Fleas are agents in distributing the germs of the Bubonic plague. Howard says that the germs of the disease known as Pink Eye are carried by very minute flies of the genus *Hippelates*. Other insects are known to spread other diseases. However, some insects are valuable to man. The honey bee makes honey, other insects furnish galls for ink, others dye stuffs, such as the cochineal, while still others serve as scavengers and effective parasites, and the silk worm furnishes our finest clothes. The bumble bee fertilizes the clover blossoms or other plants, and many other insects serve as food for birds; thus while some insects are very harmful to us others are very valuable to us. If we, with the help of the birds, exterminate those which are injurious and protect those which are beneficial, our crops will be the larger and more profitable, and our bodies more secure from disease.

We may safely assume that the value of the corn and wheat annually destroyed in this country by diseases induced by fungi is not less than \$200,000,000. The average annual loss due to rust of wheat in Illinois alone has been estimated by Prof. T. J. Burrill at nearly one-half million dollars, and careful estimates by authoritative observers in widely separated states indicates that the average yearly loss of oats in the United States due to smut equals or exceeds one-tenth the entire crop. Prof. Kellerman estimated the loss in Kansas in 1888, at \$1,382,328.31, and in 1889, at \$850,533.31. The loss in Indiana from the same cause in 1889, was estimated by Prof. Arthur at \$797,526, and in 1890, at \$605,352.

It is probable that the fruits suffer even greater proportional injury than do the grains. The blight and rot of fruit plantations, said Prof. Burrill, several years ago, would, if expressed in actual dollars and cents, frighten the cultivators from their business. The loss from apple scab throughout most of the apple growing regions of the country ranges from one-sixth to one-half the entire production. The strawberry blight in many sections often ruins crops of the luscious fruit; the loss of peach from brown rot on the Chesapeake and Delaware peninsulas, in 1888, was estimated by competent observers at from \$400,000 to \$600,000. Similar statements could be made concerning nearly all our fruits.

The vegetables, field crops and flowers and ornamental plants, and even shade trees, do not fare much better. Nearly all have enemies that cause serious damages. Over a large section of the country the usual loss to potatoes from fungus enemies varied from ten to forty per cent of the crop.

Insects and their presence and absence from our midst may make all the difference between sickness and health, irritation and comfort, poverty and wealth. They make some regions uninhabitable that would otherwise be attractive as sites for homes, and altogether their influence upon humanity, direct and indirect, is vastly greater than is generally realized.

By becoming acquainted with the habits of animals, man is able to have dominion over them, and by wise legislation to make such laws in regard to their destruction or preservation as will be to the best interests of not only the present but the future generation.

Much evil is wrought in our land through ignorance. Youth seldom stops to think how much harm is done when they ruthlessly destroy life. The maiming of a single bird may mean the death of several little ones. A careful estimate shows that only about one-half as many birds exist today as were present in our country a quarter of a century ago. One chief factor causing the decrease has been ignorance on the part of the people who have sanctioned the robbing of nests and the killing of birds.

Every boy and girl should go forth from school imbued with the idea that the killing of our best friends in the animal world merely to satisfy a savage instinct is a crime.

It is not only the actual devouring by insects of plant tissue that causes loss; the effect upon the product may be to reduce its grade and make it more or less unsalable and unprofitable. In the competition for market the grower of the best will always have the advantage; first-class fruit and vegetables rarely fail to bring some profit, where low-grade products cannot be sold for any price; and no fruit that is once defaced and otherwise injured by insects ever ranks as first-class.

Very careful estimates, based on crop reports and actual insect damage over a series of years, show that the loss due to insect pests of farm products, including fruits and live stock, now reaches the almost inconceivable total of one billion dollars annually. A brief resume of the records of damages done by insect pests, of the cost of fighting them, and of the estimates which form the basis of the above statement will make it more convincing.

GROWING CEREALS.

Probably no other insect does so widespread damage as the Hessian fly, attacking our chief staple, wheat, as well as rye and barley. One-tenth of the whole crop, valued at fifty million to seventy million dollars, is generally conceded to be destroyed by this pest every year. In certain sections the loss often amounts to from thirty to fifty per cent, and in 1900 was estimated at fully one hundred million dollars.

The southern grain louse, or "green bug," caused a loss estimated at from five to ten million dollars in Texas, Oklahoma and Kansas in 1907, and every year there is a considerable shrinkage of the wheat crop due to the various species of plant lice, whose injury doubtless amounts to two or three per cent of the crop, worth fifteen to twenty millions of dollars.

The corn crop in the United States was worth one billion seven hundred and twenty million dollars in 1909. One of the worst pests of this crop in the Mississippi Valley is the chinch bug. Several years ago Prof S. M. Webster estimated the loss by this insect since 1850 at three hundred and thirty million, and at present it probably destroys at least two per cent of the corn crop each year, worth over thirty

millions of dollars. The western corn root worm and the corn root aphid, which worked unnoticed on the roots of the corn throughout the southern territory, cause an equal loss. The corn ear worm often destroys from five to ten per cent of the crop in the South, and throughout the corn belt it undoubtedly decreases the crop by two or three per cent. The total value of the cereal crops in the United States in 1909 was practically three billion dollars, which was undoubtedly decreased by ten per cent, due to the ravages of insect pests, which thus taxed our grain growers some three hundred million dollars.

HAY AND FORAGE CROPS.

A host of small insects attack our grasses and forage crops, many of them being so small that they are unnoticed, though their aggregate injury is something enormous. Of the larger pests of grass and forage plants the army worms are among the best known, and have often caused the loss of over half million dollars to a single state in one season. Grasshoppers of various species are also more or less injurious and often become a serious menace. Probably the most serious injury, however, is done by the subterranean larvae, such as the cut worms, wire worms, white grubs, and web worms, which breed in sod land, and by the hordes of little leaf hoppers which are always prevalent and whose injury often passes unnoticed. Ten per cent of the hay crop was worth sixty-five million dollars in 1909.

COTTON.

The cotton plant has a number of injurious insect enemies, of which the boll weevil, the boll worm and the leaf worm are the most injurious. In 1904, E. D. Sanderson, Entomologist of West Virginia, made a statistical study of the decrease of the cotton crop in Texas due to the boll weevil. It showed that it was then costing that state twenty-five million dollars per annum. This estimate has been confirmed by independent investigation made by Mr. W. D. Hunter of the U. S. Bureau of Entomology, and although the loss in Texas is not so serious at present, the weevil has spread eastward into Alabama, so that its total injury remains practically the same, and has undoubtedly been a large factor in the higher price of cotton in recent years. The boll worm is most injurious in the southwestern cotton producing states, where it causes a loss of from five to sixty per cent of the crop. The total damage to cotton by the boll worm is approximately twenty million dollars per annum and not infrequently exceeds that amount. In 1880 the United States Entomological Commission made an investigation of the cotton worm and valued its ravages at thirty million dollars, but with the extensive use of Paris green and arsenical poison its injury has been greatly reduced, and now amounts to from five to ten million dollars annually. Various minor pests of the cotton plant inflict a considerable amount of local injury, and with the above pests damage the crop at least ten per cent, worth eighty-five million dollars in 1909.

The cotton boll weevil, the greatest pest in the South, has caused a loss of one hundred and twenty-five million dollars, represented by

two million five hundred and fifty thousand bales of cotton, since the weevil invaded the country, according to an estimate of the Department of Agriculture, issued October 30, 1912. The weevil crossed the Rio Grande into the United States twenty years ago. The problem of the control of the cotton boll weevil will be more difficult as the pest continues its invasion of the cotton belt, announces the department. It cannot be considered as yet completely solved. There is no occasion to lose hope, but there must be devised better means of controlling the pest and reducing the enormous loss suffered, especially during unfavorable seasons in Texas.

Today the cotton boll weevil is not in Tennessee. It is, however, 10 miles from Memphis, in DeSoto County, Miss.

TOBACCO.

Tobacco is attacked by insects which form one of the chief "bug-bears" of tobacco growing. At all stages of its existence ten per cent of the crop, worth ten million dollars, is certainly destroyed by them every year.

TRUCK CROPS.

Truck crops are peculiarly susceptible to insect attacks, and their control forms one of the chief items in the cost of production. It is safe to say that truck crops suffer from insect ravages fully twice as much as do the staples, or twenty per cent of their total value. Statistics are not available for the present value of truck crops, but they are probably worth three hundred million dollars in 1909, making the insect attack for the trucker fully sixty million dollars.

FRUITS.

Fruit trees are also much more seriously injured by insects than our staple crops, and their control involved a large expense to the fruit grower. Where it is not combated the codling moth or apple worm would cause a loss of from thirty to fifty per cent of the crop. And where it is controlled by spraying a considerable expense is involved. The loss and the cost of the treatment of this pest alone amounts to \$20,000,000 for the United States, and were it not for the fact that it is only largely controlled in the principal fruit growing sections the loss would double or triple this sum. The loss due to San Jose scale is difficult to estimate, but it is well known that it has destroyed millions of trees and that in the principal fruit regions, where this pest is prevalent, it is necessary to treat the trees annually at a cost of from 10 cents to 25 cents per tree.

So that ten million dollars a year would be a very conservative estimate of its annual cost. Both deciduous and citrous fruits have a host of insect pests always present and doing more or less damage and occasionally becoming so abundant as to threaten the life of the trees or their crops. Twenty per cent of the value of our fruit products, worth at least thirty million dollars, is certainly destroyed by insect pests every year.

FOREST INSECTS.

Only those who have had the opportunity to observe the ravages of insects in timber and in timber products can appreciate the enormous losses which they occasion. Probably no one is better informed upon this matter than Dr. A. D. Hopkins, in charge of the forest insect investigations of the U. S. Bureau of Entomology, who has made a life study of these pests in all parts of the country. In a recent circular he states that the amount of insect killed and damaged timber left in the woods, plus the reduction in value of that utilized, to be charged to insects, is not far from an equivalent of ten per cent of the value of the annual output of forest products of all kinds. The total value of the forest products in the United States in 1907 is given as one billion, two hundred and eighty million. The losses from insect depredations would, therefore, represent an annual loss in cash value of more than \$100,000,000. The insect injury to the shade trees of city streets, parks and estates should also be mentioned, for such pests as the gypsy moth, brown tail moth, the elm leaf beetle, tussock moths, etc., are not only causing enormous losses and large expense for their control but they are often destroying the value of real estate and through killing the trees are *destroying the scenic value of property and changing the aesthetic environment in a manner which will require many decades to remedy*, if the previous conditions can ever be even partially reproduced. The State Forester of Massachusetts has recently shown that the New England States and the Federal Government have spent fully \$7,000,000 in fighting the gypsy and the brown tail moths in New England, and at the present time the New England States and the Federal Government, municipalities and private estates are spending fully \$1,000,000 per annum in this warfare in the preservation of their shade and forest trees.

LIVE STOCK.

Insect pest, including the ticks and mites, are almost as important as enemies of live stock as of crops. The principal drawback with cattle raising in the South is the Texas Fever, transmitted by the cattle tick, which has been charged by the officials of the Bureau of Animal Husbandry with a loss of \$100,000,000 annually. The ox warble, which causes the grubby hides of cattle, causes a loss estimated at from \$10,000,000 to \$35,000,000 per year, due to the depreciated value of the hides and the lessened quantity and poor quality of the beef of affected animals. The screw-worm fly is a constant annoyance to cattle and source of loss on the range. The numerous biting and parasitic flies cause a considerable loss to the owner of live stock, both by actual damage done and through the annoyance preventing growth and production. The sheep scab, sheep tick, the sheep bot causing staggers, or grub in the head, the horn fly, buffalo fly, black fly, and numerous species of lice which affect all of the domestic animals, are among the pests which must be combated by the stock man. In 1909 the live stock products were worth \$3,000,000,000, and it is estimated that fully ten per cent of this amount was lost through injury from insects,

STORED PRODUCTS.

Even after the crops have been gathered and garnered, and indeed, after they and animal products have been manufactured, they are constantly subject to the attacks of numerous weevils, moths, and other insect pests of stored products. Every housewife and every merchant knows that only through constant vigilance can they prevent these ravages. Mills, tobacco warehouses, storehouses, and vessels must be frequently cleaned and often must be fumigated to prevent the increase of insect pests peculiar to them. It is estimated that at least five per cent of the cereal crops are destroyed by insects while in storage, which would mean a loss of \$150,000,000, and in many cases the loss to corn, particularly in the South, is much greater. The total loss due to insects in stored goods of all kinds is impossible to estimate, but would fall not far short of \$200,000,000. A billion dollars is thus a conservative estimate of the damage done to staple crops, fruits, truck crops, domestic animals, timber, and stored products by these apparently insignificant insects.

All this then goes to emphasize the fact that the successful farmer—as the successful man in any other trade or profession—is the one who is able to overcome obstacles which, though possibly ruining his neighbor, are making a good market for his special product, for these insect pests can be largely overcome. Rational methods of general farm practice with the proper use of apparatus and insecticides, even such as are now known and in which improvements are being constantly made, if intelligently used by American farmers, would save to them the larger part of this enormous loss.

FOREIGN ORIGIN OF MANY OF OUR INSECT PESTS.

Fully fifty per cent of the important injurious insects pests in this country are of *foreign origin*. Among these are the codling moth, the Hessian fly, the asparagus beetles, the hop-plant louse, the cabbage worm, the wheat-plant louse, oyster shell bark louse, pea weevil, the croton bug, the angoumois grain moth, and the horn fly of cattle, and, in comparatively recent years, such very important pests as the cotton boll weevil, the San Jose scale, and the gypsy and brown tail moths. Many, if not all, these pests, and others not mentioned, could have been kept out or their spread much checked if proper quarantine legislation had been available, and the saving to this country would have been enormous.

While it is true that certain classes of injurious insect pests, such as the house fly and other household insects, and other insects which may be similarly carried by ships' cargoes or in the packing of merchandise, have been imported, and still will be in spite of any quarantine law, however rigid; it is equally true that the great mass of the foreign insect enemies of orchards and forests have come in on nursery and ornamental stock, and might have been kept out, in large measure, if an efficient quarantine law had been in operation.

Taking up a few of the insects just mentioned, the codling moth now costs in loss and cost of treatment of trees \$16,000,000 annually; the San Jose scale, similarly in loss and cost of treatment of trees,

\$10,000,000 a year; the Hessian fly probably causes an annual loss of \$50,000,000, and in some years this loss has reached the enormous total of \$100,000,000.

The gypsy moth and brown-tail moth in Massachusetts and portions of other New England States are now costing these states, in expenditures merely in efforts to control, not counting damages at all, upward of a million dollars a year. In addition to this the National Government is appropriating \$300,000 a year to aid in controlling these pests along the highways and by this means check their more rapid distribution. In spite of these efforts and this enormous expenditure, these insects are still slowly spreading, and great damage is done yearly to woodlands, private grounds and orchards. The dissemination of these two pests over the whole United States, as is extremely likely under present conditions, would entail a like cost throughout the country—a tremendous and unnecessary charge on our fruit and forest interests.

Very careful estimates based on crop reports and actual insect damage over a series of years show that the loss due to insect pests of farm products, including fruits and live stock, now reaches the almost inconceivable total of \$1,000,000,000 annually. The larger percentage of this loss is due to imported insect pests, and much of it undoubtedly would have been saved if this country had early enacted proper quarantine and inspection laws.

PRACTICAL MEASURES HELPFUL IN PEST CONTROL.

Make careful and opportune use of the plow, cultivator, disc, common harrow, weeder, mowing machine and scythe, to cut off all their common sources of support for such insect foes of the field, orchard, garden and forest. Clean farming also means to pick up boards, limbs, brush, piles of hay, etc. These should be burned or so disposed of that the full value of the rubbish will be conserved without damaging crops, such as may be injured by insects which find shelter beneath it. Keep the weeds down along the roadside and in pastures, against the fence rows and in out-of-the-way corners. The remnants of old crops and volunteer plants should be destroyed as soon as possible after harvest.

Do away with many fences. Use sheep as an aid in killing weeds which in turn harbor insects.

Protect insect-eating birds.

Study the insects.

Make insect study a common school study.

A clean and tidy place harbors few pests, in general, if the plantation is clear of litter and the adjoining fields contain no harbors of brush; mice and rabbits are rarely annoying to the orchard.

The official Entomologist of the State of Illinois, Prof. S. A. Forbes, after years of careful field operation and statistical study, has recently expressed his belief that the insects of the state of Illinois derive as large a profit from the agriculture of that great agricultural state as do the farmers themselves. Fortunately, however, there is a silver lining to this dark cloud of insect injury. If these creatures have increased on every hand our knowledge of methods of controlling

them has also augmented with the passing years. Many of the remedies proposed ten to twenty years ago seem now foolish and impracticable. Within the last decade especially the progress has been phenomenal. It has been learned that many insects can be checked by proper crop rotation, and that the natural enemies of others can be used to destroy them; and that others are easily killed by improved insecticides, but the most important advance has been the introduction of spraying machinery, an apparatus by means of which insect killing substances may be easily and rapidly distributed over the surfaces of trees, shrubs, vines and herbaceous plants. Its introduction into American horticulture marks an advance almost as important as was marked by the advent of the improved cultivators for agriculture; before the latter were introduced the weeds that infest the soil were fought by the hand hoe, but now a single team does the work of many men.

With a large class of farmers and fruit growers spraying has become a recognized part of the season's operations, and therein lies the chief promise of the method. When the belief becomes general that it is as much importance to save the crop from destruction by the foes as it is to produce it; that fighting the noxious worms must take its place as a farm process alongside that of fighting noxious weeds; that the parasitic plants which absorb the vitality of leaves and fruit are as dangerous to the crop as plants which dispute with it the possession of the soil, and when along with this recognition there is placed before the farming community a cheap and wholesale method of preventing the injuries of these organisms—then the vast annual loss now suffered because of insects and fungi will be very greatly lessened.

The day is not far distant when fungicides and the means of applying them will be as much a part of the equipment of a first-class farm, more particularly one devoted to fruit or truck, as is the cultivator or market wagon.

We shall conquer when we know how. When we with open eyes and unstopped ears as true students of nature acquire the knowledge with the possibilities within our reach.

We shall be able rightfully to assert our royal authority and effectually have dominion over every living thing that moves upon the earth.

The time is rapidly approaching when the farmer or gardener will as little dare to neglect the study of insect pests and plant diseases as a surgeon dare practice without a knowledge of anatomy, or a sailor hope to become a captain without studying navigation.

The close study of soils, fertilizers, weeds, live stock, insect pests and plant diseases of farm, garden and orchard crops is rapidly raising the science of husbandry and horticulture to a plane where it is no longer regarded as irksome drudgery, but as one of the highest callings of a free and intelligent people.

The President introduced Mrs. Myra A. Tandy, of Leoma, Tenn., who made a very interesting and valuable talk to the delegates on "Farming From the Farmer's Wife's Standpoint."

The convention then adjourned until 8 o'clock at night.

NIGHT SESSION.

One of the most interesting and instructive sessions of the institute was on the night of the second day of the meeting of farmers.

The convention was called to order by Assistant Commissioner Jesse Tomlinson, who presided in the absence of President Warren.

Mr. Tomlinson introduced Dr. Lucius P. Brown, State Pure Food and Drugs Inspector, who pleased the farmers with a stereopticon lecture on "Relation of Pure Foods and Drugs to the Farmers." This feature of the program was very interesting and held the attention of all the members.

Prof. H. A. Morgan, Director of the Experiment Station at the University of Tennessee, was presented, and gave his address on "The Cultivation of Corn." This was one of the best features of the meeting.

The Secretary of the Institute has been unable to obtain the copies of the addresses of Dr. Brown and Prof. Morgan.

HEALTH AND SANITATION ON THE FARM.

The President introduced Dr. Olin West, of the Rockefeller Hookworm Commission, who gave a lecture on "Health and Sanitation on the Farm." His address was heard with a great deal of interest by the delegates.

Dr. West's address follows:



The dweller in the city plays a relatively small part in matters pertaining to sanitation. The city brings water to his home and is responsible for the purity of the water; sewers are provided and the city is responsible for their efficiency; household waste is removed by the corporation almost as fast as it accumulates; the neighbors are required to observe the laws that are passed for the protection of the public health; the food supply of the city is carefully guarded by competent inspectors. In the country, however, the sanitation of the home is a matter of individual responsibility, and the farmer must provide

and protect his own water supply, must arrange for the removal of household waste and human waste from the premises, and cannot control the actions of his neighbor.

The subject given me to discuss is more fitted for several addresses than for one which must be crowded into the short time at my disposal,

and I can hope only to present a few leading thoughts for your consideration, not taking time to enlarge upon them nor to make explanations which would, perhaps, be of value.

The public health is a thing of vast importance to all the people, and to no other class is health as necessary as to the farmer. Anything which tends to add to the contentment and satisfaction of a family or a community contributes to health.

As I have traveled over our state and noted the tendency of the average farmer to locate his home upon some spot of waste land upon the farm, some rocky, inapproachable, barren spot which will not grow grass nor corn and chosen for the site of the home for that reason, I have marveled that there has not been a greater exodus of the young men and women of the country into the towns and cities. The selection of the site for the country home should be made with reference to the comfort and convenience of the family and with a view to making the home attractive as can be made within the means of the family. The kind of stinginess that impels a man to put his home on the only spot on the farm that cannot be made to feed a steer is the meanest of all the varieties of stinginess.

It is important, from the health standpoint, that the home be built upon a site that is dry, with drainage away from the house. The cellar is an important part of the farm house and a dry cellar to which fresh, moving air can be admitted, is greatly to be desired. Shade adds greatly to the attractiveness of the home and to the comfort of the family, but dense shade from trees thickly set close to the house is a menace to health. Sunshine is nature's sterilizer and the best known to man. It should not be excluded by dense shade upon the outside of the house nor by heavy curtains upon the inside.

It is hard to understand the tendency of the country resident to put his house just as close as he can get to the center of the road without obstructing the roadway. Dust increases the labor of the housewife and is a distinct menace to health. Dust laden air is generally germ laden air, and the home should be so located as to reduce the amount of dust entering to the minimum. Dust which is free from germs can easily produce irritation of the membranes of the nose and throat that will allow the entrance of disease-producing organisms later on.

Many farmers seem to think that a house without cupolas and fancy, tortuous roof is not fit for human habitation. This sort of construction is expensive in the first place, and is a source of constant expense as long as the house stands. A roof with many valleys and humps is not always a leaky roof, and dampness in the house is not conducive to health in the inmates. The simpler the plan of the house, the better for health. Angles and corners should be avoided. They are the abiding place of dirt and insects which may transmit disease. The living room of the country home should be large enough to accommodate the entire family in their leisure hours and should be the most attractive room in the home. The sleeping room should be large enough to contain *necessary* furniture and to insure abundant air supply to the sleeping inmates. It is not necessary to have rooms commodious enough for hay barns, with tremendously high ceilings and

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Delegates to Middle Tennessee Farmers' Institute in Session at Nashville, Dec. 3-4-5, 1912, Photographed on the Steps of the South Front of the Capitol. In the Center, with hat in hand, standing behind the boy with the Banner, is Retiring President Sam N. Warren. On the right is Commissioner of Agriculture T. F. Peck, and on the left is the new President, Robert Gallagher, of Shelbyville.

great expanse of wall surface to collect and hold dust. Such rooms rapidly deplete the wood-pile and impose tribute to the coal dealer and are not at all necessary from the health standpoint. Three thousand feet of air per hour for each inmate is all that is necessary and greater space than enough to insure this is wasted space.

Every room in the house should have as nearly perfect ventilation as can be gotten. The dread of night air that exists in the mind of the average person is a dread that is in no way justified. The average country resident spends the day in the open air, not fearing the effects of the gentle breeze nor even the howling gale upon his health, and then goes home at night, carefully closes every door and window, makes up a big fire, turns down the oil lamp to the point where perfect combustion is an impossibility, and goes to bed in the room occupied by as many of the family as can be mustered. Night air and day air are all God's air, and if kept fresh and pure are equally fit for respiration.

Heavy curtains and rugs are an abomination to be shunned. They are dust collectors and menace health. Smooth, hardwood floors are no more expensive and decidedly more sanitary. Small rugs can add to the beauty and comfort of the room and are easily cleaned. The littering up of a room with quantities of furniture just because you have the furniture, or because the pieces are heirlooms, handed down from great-great-grandmothers is an insanitary proceeding.

Every home should have, if possible, a room to be used exclusively as a "sick room." This apartment should have, if it can be arranged, a sunny exposure, and should have only such furniture as is necessary to the comfort and well-being of the patient. No curtains, rugs, pictures, or other impedimenta should be placed in this room.

Disease is many times spread as the result of contact with the sick. The nursing of the sick should be performed by the fewest number of persons compatible with the welfare of the patient. Where communicable disease is present the nurse should not be the one whose duty it is to prepare food for the family. This is especially true in case the present disease is typhoid fever. The patient should be provided with individual dishes, which, in cases of communicable disease, should be carefully sterilized with boiling water whenever used.

The practice of promiscuous visiting of the sick, which obtains in the country, is to be condemned. I fully understand the dependency that exists between neighbors in the country, and know the praiseworthy motives that lead to the practice of universal visiting of the sick, but these things do not affect the virulence of disease-producing agents, nor do they prevent the spread of disease throughout a community. It never helps a sick man to get well to have his room constantly filled with solicitous friends and gossipy individuals, while convalescence can be, and undoubtedly is, oftentimes delayed and communicable disease carried wide because of the congregating of the neighbors and friends in the sick room.

The sick should be isolated as nearly as can be done, both for their own benefit and as a preventive against epidemics.

There exists in the minds of many persons the idea that all children must necessarily have scarlet fever, measles, whooping cough, and other diseases incident to childhood, and having this notion firmly established in their minds they deliberately expose their children to infection. This is an absolutely criminal practice which cannot be too strongly condemned. In very young children these diseases are fatal within themselves, and they produce conditions that strongly predispose to other diseases that exact an awful toll in disability and death among our people. Many of our consumptives *are* consumptives because measles prepared the soil for the invasion and growth of the germs of tuberculosis; numbers of children die from pneumonia because they first had whooping cough; many cases of "Bright's disease" have resulted as sequelae of scarlet fever; deafness and blindness, partial or complete, paralysis and deformities, and other disabilities follow in the wake of the contagious diseases of childhood. Strict isolation of cases of measles, scarlet fever, diphtheria, whooping cough, and all contagious diseases is the best preventive measure.

The greatest single health problem today is that which concerns the disposal of human waste. Typhoid fever, hookworm disease, dysenteries and other diseases are spread as a result of the pollution of the soil with human excreta. Food and water supplies become contaminated in various ways because of soil pollution, and disease is spread abroad. In the country the satisfactory disposal of excreta is rather hard to accomplish, but it is not hard to provide sanitary closets upon the premises of every home and school that will reduce the danger very markedly. In Middle Tennessee, with its limestone formation, the dangers arising from soil pollution are very real and hard to control unless careful steps are taken to prevent the contact of the ground with the excreta. Water from the clearest spring that flows may be dangerously contaminated with typhoid germs thrown off by an individual sick, who is miles away from the spring, the water having run to the spring between ledges of limestone for long distances.

It is too often the case that the spring at the bottom of the hill has the stables and outhouses above it with the drainage toward the spring. The source of the drinking water for the farm home should be carefully guarded against surface drainage, and guarded as well as can be done against seepage. The well should be cased and the top protected by cement well raised above the surface of the ground, and ought to be cleaned at frequent intervals. If a cistern is used the same rules of care apply and the water should be freely agitated each day in order that it may be kept aerated.

No collections of stagnant water should be allowed to form near the house. Malaria is carried by mosquitoes which breed in stagnant

water. Malaria can be prevented by preventing the breeding of mosquitoes.

Before closing I want to touch upon a subject which I consider of great importance from a health standpoint, as well as from an economic standpoint with no health connection. It is my firm belief, after abundant opportunity for observation and evidence for conviction, that hundreds of persons in the rural districts of the South are literally starving with stomachs full of good food. You as farmers understand the necessity for having the ration which you feed your beef cattle and milk cows well balanced; but, from my observation, the average farmer seems to think that this is not a question worth considering in connection with human feeding. I have many times sat at tables in hospitable country homes with the flesh of one animal served in tremendous quantities in three different ways; as, for instance, sausage, spare ribs and backbone, or ham, and this meat was practically the whole meal. But the question of the balance of the ration is not of so much moment as the matter of the preparation of the food. It will mean a great deal for Tennessee homes when domestic science is widely and carefully taught in our common schools. You can no more rightfully expect efficient labor from a man fed upon an improper ration than from a poorly fed horse; and you cannot rightfully expect a child to thrive, mentally or physically, whose stomach is loaded with food so illy prepared that nothing short of the gizzard of an ostrich can grind it into digestible form. Good food, properly selected and well prepared, makes for contentment and health.

"Public health is a purchasable commodity," and I believe that our people are going soon to awaken to the truth that there is no other thing of as great material importance as the health of the whole people. Tennessee needs legislation that will enable the departments of health, city, county and state, to carry forward the great work that is possible for the prevention of disease.

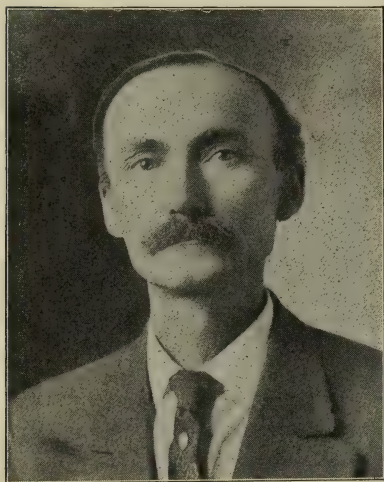
If time would permit I should like to bring to your attention many other health matters of various kinds. The health of our school children should be guarded in the schools; the inmates of our criminal and charitable institutions, many of them in these institutions because of preventable disease in their own bodies or those of their parents before them, ought to be surrounded with hygienic and sanitary conditions that would keep them well while they are in these institutions, and those of them who are the victims of communicable disease ought not to be turned loose upon the community to scatter abroad sickness.

Before giving way to the speakers who are to follow allow me to remind you that the State Board of Health has for distribution pamphlets upon typhoid fever, hookworm disease, diphtheria, and other diseases, and that we shall take pleasure in making microscopic examinations for the diagnosis of hookworm disease for any citizen of the State.

THE COST OF PRODUCING CROPS.

The President then presented Mr. F. W. Gist, Special Agent of the United States Department of Agriculture at Nashville, who spoke on "Cost of Production of Farm Crops."

Mr. Gist's address follows:



The business side of farming is just now beginning to receive the consideration to which it is entitled. This is coming as a natural sequence to the serious consideration of more profitable methods, and in solving the problem of profit the outlay must be considered before the income can be given attention. The cost of producing a crop is merely the outlay consequent to production, so that in determining the cost we must account for the cash or its equivalent expended in growing the crop, and profit or loss is the difference between the outlay and the income. It is not the purpose of this address to cover

the whole question of profit and loss on the farm, for that would be going into the broad question of farm management, or the business side of farming. We shall only consider here the methods of determining the cost of producing a crop, or, in other words, what elements of expenditure properly enter into the debit side of a crop account.

Farming is a business; and the farmer is as much a business man as the merchant. As such, a record of his transactions are as necessary to success as it is to any other business man. There was a time in our recollection when the individual merchant who bought and sold for cash did not consider it necessary to keep books or accounts. Now, even though every transaction is represented by the income or outgo of actual cash, every business man finds it necessary to keep a record of such transactions in order to determine where his profits and losses occur. It is only in this way that he can perpetuate the successful features of his business and eliminate those which are unprofitable. It can scarcely be a question open to discussion that the farmer must do the same thing if he is to perpetuate and improve the profitable features of his business and eliminate or change his methods of growing those crops which are now grown at a loss.

I can not go into the broad subject of farm accounting here, though we might find it interesting. I will say, in passing, that not enough farmers keep accounts. Even in our colleges of agriculture not enough importance is attached to this subject.

I do not propose to tell you what it costs to produce a crop. I do not know, and I do not believe that very many producers of crops

know. In April, 1911, the bureau to which I am attached published a report on the cost of producing corn in 1909, which was followed in later months by similar reports regarding wheat and oats. The report for Tennessee on corn, being the average of returns from 144 farmers, disclosed the fact that corn was produced in Tennessee in 1909 at a cost 40 cents per bushel, with an average yield of 30.8 bushels, and was valued at 69 cents, showing a profit of 29 cents, or 70 per cent on the cost. This may have been fairly representative of results for the entire State for that year, but with a different yield and a different price for corn or a difference in the method of cultivation the results would have, of course, been different.

It is my purpose to discuss here the elements which enter into the cost of production, or how to determine the cost of producing a crop. In following this line of thought we will naturally be presented with a suitable form for keeping the record from which this cost must be compiled.

Every crop planted on a farm is a distinct part of the owner's business, just as every character of goods sold by the merchant is a distinct source of profit or loss. It is really easier for the farmer to determine the actual cost of each of these features of his business than it is for the merchant to determine the cost of selling each particular character of goods from his shelves. This is evident, because the farmer will devote the continuous time necessary to completing the planting and cultivating, or harvesting, of a particular crop, perhaps, before he turns his attention to another crop, while the merchant or his clerk is repeatedly, during each day, dividing his time between the selling of different kinds of goods. Hence, it is entirely practicable for the farmer to keep an account of the receipts and expenditures for each of his individual crops, especially those principal crops upon which he really depends for his main income.

In determining the elements which enter into the cost of production we are assisted very materially by a knowledge of what is required to produce a crop, and we find that the elements of cost follow very closely the elements of growth, or at least those over which the farmer has control.

In order to produce a crop we must have and use, in the order named:

First, the land.

Second, the land prepared.

Third, the seed.

Fourth, the seed planted.

Fifth, the plants cultivated.

Sixth, the crops gathered.

Seventh, the crops marketed.

Whatever these seven elements cost, either in labor or investment, constitute the cost of producing and marketing a crop. Therefore, an account kept of the expense of production must follow, in some convenient form, this arrangement. Labor constitutes the principal investment in the business of producing a crop. That labor must be

performed either by man or beast, usually both. Therefore, outside of the proper rental return of the land, which is the original investment, the cost of production is made up principally of the cost of labor of man and beast. How to determine the proper cost to attribute to this labor is the point at issue here, as well as the correct determination of what should be a fair rental return for the land used. Therefore, the use of labor and its attendant cost will be discussed about in the order suggested above as needed at the various stages of production.

The land upon which a crop is produced, as said above, is the principal investment of the farmer, just as the cash paid into a mercantile business is the principal investment of the merchant. It is rightfully considered that the interest on the investment is the first fixed charge against the business. It is equally true that a fair interest upon the value of the land used in producing a crop is the first cost of production. This interest is known as the rental value of the land. How should that rental value be determined? The most reasonable answer to this question appears to be that each farmer ought to charge against his crop the rate of rental which is customary in his community for the same character of land. If, by renting out his land, he can get for it \$3.00 per acre, or, if he sought to rent land for his own use he could obtain it for a rental of \$3.00 or \$4.00 per acre, that ought to be considered a fair price to fix as the rental value of his own land when used by himself. If, on the other hand, he can rent his land for a certain proportion of the crop produced, or, if he can rent land for his own use upon such terms, he ought to use the same custom in dealing with his own land for his own use. Therefore, he will charge against the crop on a piece of land whatever is the customary charge in his community for the same character of land when used for the same purpose. This may or may not give him a fair interest return on the value of his land. If it does, there is no question as to the correctness of the charge; if it does not, then there is something wrong, either with the price which custom has fixed, or with his own idea of the value of his land; but he certainly should receive no more nor less from the crop as rental for his land than he could receive from a tenant, or than he would have to pay if he were renting as a tenant.

Some students of this subject have concluded that it is more nearly proper for the landowner to charge the crop with the interest on the value of his land, with the taxes, and with the loss of soil fertility in lieu of a rental fixed by custom, and that only the tenant should charge a per-acre rental. My objection to this theory is that the interest on land value may depend on a fictitious valuation placed by the owner on some erroneous idea or sentiment or local condition; that the taxes, being uniform on all the land, used or unused, should come out of the rent charged, thus creating an incentive to make every acre productive of its own share of taxation; that the loss of soil fertility is not so

much due to crop production as to the methods of soil management, and should therefore be taken care of by its proper portion of the rent, used to the best advantage by the owner in replacement. This method tends to a more uniform cost of production, by making possible a system of fixed charges, which in the economic working of the law of supply and demand will result in a more nearly stable price to the consumer.

Coming to the second step in the production of a crop, we must determine what is a proper charge for preparing the land for the coming crop. This preparation is, in practically all instances, accomplished by plowing with a man, a plow, and a team. If this combination is hired it will be at the customary rate per day, or per hour, which prevails in the community. If a man owns such a combination and desires to hire it out to others for wages, he will be compelled to accept such wages as are customary in the community. Therefore, it is contended that the farmer should charge against his crop for the labor of himself and his team and his implement such rate of wages as is customary in the community for the use of such an outfit. Hence, from the first breaking of the soil to the time of planting, he should charge against each crop, as cost of preparation, his own and the labor of his team and implement at such rate per hour or per day as is customary in his community.

Under the head of preparation may be properly included the cost of any fertilizer used as well as its application. If this consists of commercial fertilizer the cost of its purchase and application will be readily determined by adding to its purchase price the value of the labor required to spread it. In the same way will be determined the cost of assembling barn-yard or vegetable manure and distributing it. If a crop of cow peas has been turned under previously it will be proper to charge here the cost thereof, although if a land account is kept such a charge might be made in that account, in which case it should be taken care of in the item of rent charged against the crop.

In this connection, it is the contention of some that each crop ought to be charged with the cost of feeding the team in addition to their regular daily wage. This idea is thought to be erroneous, for the reason that the cost of feeding the team and keeping the implement in repair, as well as the cost of the man's own living, should be cared for out of the wages received, and the rate of wage should be, and is, fixed by the community with the view of caring for this expense. Therefore, if the farmer desires to know whether his own labor and that of his teams are profitable, or otherwise, he should keep a separate account against himself and his teams, to which he should charge the expense of living, and credit the receipts for labor performed. Certainly it is not fair to charge the crop with the regular rate of wages and at the same time charge it with the cost of keeping a man and team.

If, then, we have settled the correct theory of a charge for labor of man and beast and for the use of implements, this theory will run throughout the entire period of cultivation whenever such labor comes into play.

Having accomplished the preparation of the soil, and coming to the time of planting, we are confronted with the cost of the seed which we place in the ground. This is a simple matter of determining the proper valuation to be put upon the seed used. Whether the seed are purchased, or whether they come from the farmer's own stock left over, their reasonable value should be charged against the crop when they are placed in the soil.

Throughout the cultivation season the crop should be charged with every hour or day of labor expended upon the crop in question, according to the theory discussed above.

There are many miscellaneous items of cost which must largely be determined at the time the expenditure is made. It has been said above that the cost of an implement, which is going to be used for a number of crops, should not be charged to any particular crop, because it may be used for all crops and for a number of years, and only a fair rate of wage should be included for it in the wage allowed for the combination of man, animal, and implement. If, however, certain repairs are necessary on the implement for a specific crop, such as blacksmithing for a certain purpose, or other little items of expenditure along this line, which may be necessary for this particular crop, the expenditure should be charged thereto and become a part of its specific cost.

We have come now to the gathering or harvesting of the crop. This is also performed by the labor of man, or beast, or both; sometimes in connection with the use of a mechanical implement. Here the same rule of determining the proper charge should be followed as that discussed above, allowing the customary wage to the man and the team and for the use of the implement as is customary in the community. In some communities cotton pickers may be hired for 75 cents per hundred pounds; in others it may be necessary to pay \$1.00 per hundred. If the man and his family accomplish the picking of his crop, they should be allowed the same rate of wage which would be necessary if hired hands were used in gathering. The same principle will apply to the gathering or harvesting of all crops, and every hour of labor should be included in this cost, whether paid for by the amount of work performed or by the hour.

The cost of marketing will now be charged, and all labor or other expense necessary in connection with the preparation of the product for market, or with conveying it to market, should be included. If this is a matter of the farmer's own labor and that of his own teams, the same principle will be applied as is discussed above. This item

of cost will include the ginning of cotton, the threshing of wheat and oats, or the husking and shelling of corn. If, instead of taking the product to market, it is placed away in the bin or barn, the cost should be charged just the same.

At this point the total cost of producing a crop has been arrived at, and the farmer is ready to receive in money, or its equivalent, the returns of his year's business. A record of these returns is a simple matter and is confined to the actual amounts received. However, in many instances, the product is not sold immediately and is, in many instances, kept for personal use. In such cases the crop should be credited with the market value of the product at the time it is laid away or finally taken out of the process of production. Therefore, the receipts of the crop will consist of the actual amount received upon marketing same, or the market value of the product which is unsold or on hand. In the case of cotton, for instance, the receipts may be had for the crop sold in the seed, or it may be that the lint is sold and the seed retained. In such cases the crop will be credited with the amount received for the lint cotton and with the market value of the seed which is put away for future disposition or personal use. The same thing may be true of the corn crop, a portion of it being actually sold for money and a part retained for use. The crop should be credited with the aggregate amount gathered at the market value.

A comparison of the total value of the crop thus determined with the total cost already determined will show the profit or loss sustained on this particular crop. Such an account as is suggested above, kept for all the crops, will make a complete record of the farmer's business, and an aggregate of his profits and losses will show the aggregate of his business for the year. If one crop makes a profit and one a loss, he will know it, and his record will, in all probability, enable him to repeat his profits the coming season and steer clear of his losses.

The form of such an account as has been discussed above is given in this connection, which seems to cover all the points which have been discussed and which enter into a complete transaction for the given crop. A study of this form will, in a measure, supply the farmer with a basis for studying the whole question of farm accounts. To the studious farmer will doubtless occur some changes, which may suggest themselves to him, and which may be in his individual case desirable. Every bookkeeper will perhaps make his form of books conform closely to the requirements of his own particular line of business, as well as to his own individual ideas of the record desired. This will be true as well of the farmer, and especially after he has given some careful thought to the subject.

HISTORY AND COST OF CROP

Field or Plat Number of Acres Character of Soil

Date	Description of Cultivation	Implement	Depth of Cultivation	Hours		Total	
				Man	Team		
	First Breaking.....						
	Harrowing.....						
	Second Breaking.....						
	Harrowing.....						
	Preparation of Seed Bed.....						
	Planting..... Seed Valued at.....						
	Labor of planting.....						
	First Cultivation.....						
	Second Cultivation.....						
	Third Cultivation.....						
	Fourth Cultivation.....						
	Fifth Cultivation.....						
	Miscellaneous.....						
	Rental Value of Land.....						
	Total hours and cost of cultivation.....						
	Gathering or Harvesting.....		Amount gathered				
	Total.....						
	Cost of Marketing.....		Amount Marketed				
	Total.....						
	Total Amount of Labor and cost of crop.....						
	Receipts.....		Amount		Price Per Unit	Total	Val.
	Value of product unsold or on hand.....						
	Total Value of crop.....						
	Profit or Loss.....						

DEDUCTIONS

Cost of:	Per Acre		Per Unit			Per Acre		Per Unit	
Prep. of land.....					Receipts:				
Planting.....									
Cultivation.....					Total				
Miscellaneous.....					Profit or Loss.....				
Rent.....									
Gathering.....					Yield per Acre ...				
Marketing.....									
Total									

It will be seen that this form provides first for recording the kind of crop concerning which the record is kept. The particular field in which it is grown may be described by number or letter. The number of acres devoted to the crop must be set down in order to make up the summary at the end.

In the main body of the form is found first the date column, in which the correct date of transaction should be entered. Next is provided spaces for each possible character of cultivation or item of cost from the first breaking to the final marketing of the crop. A space will be found for recording the number of hours of labor of man and team, and in the last column the total cost of each act of labor or expenditure will be recorded. Also spaces for the record of receipts, which will include the yield, and for the profits or losses are provided.

In the summary of such a record many things of interest may be determined. The cost of each stage of production can be found, as well as the total cost per acre and per unit of measurement, and the profit or loss per acre and per unit. We have naturally found the yield per acre. We may find the ratio of rent to the value of the land; the proportion of cost which each stage of production bears to the whole, etc.

If such a record has been kept for each crop you will know the two things which are of all importance. The first is which crop is most profitable and the second whether you have received a price for your product which is within the cost.

At this point the objection may be raised that if the farmer receives wages only for the actual time spent in producing a crop, they will be insufficient for his living. This is true, because all crop production is accomplished within about eight months of actual labor, and few men can hope to receive a large enough wage in eight months to live on for twelve. This, however, is no fault of the crops, and the consumer should not be expected to pay for this four months of idleness. These four months should be employed, as they may be in many ways known to the farmer who has solved the problem of farm management. The care of live stock, the maintenance of fertility, attention to the orchard—in fact, an intelligent diversification of profit-sharing interests will solve this problem in the right way.

Much discussion has been given to the question; What is a fair price for agricultural products? I do not see how the question can be answered unless the cost of production is known. Of course, the grower ought to get all the market will stand; but the grower occupies an economic relation to the consumer, whose rights are also entitled to just consideration. This, however, is another story, with which we are not dealing here.

Know whether your business is profitable and know it from an accurate record. Find out where your losses occur and stop the leak. Learn where your profits come from and enlarge them if you can.

If your Commissioner of Agriculture had a thousand such records as we have discussed relating to the principal crops grown in this State he could point some lessons from them which would be most valuable

to you. I hope he will take up the subject and that you will be prepared to help him. I hope your very excellent school of agriculture will teach your boys more about this subject so they may improve on the business methods of their fathers as other boys are doing in other lines of business. I hope you may find time next season to watch this feature of your business and receive from it the many items of importance and interest to be gathered.

The convention then adjourned until 10 o'clock Thursday morning.

THIRD DAY—THURSDAY, DEC. 5, 1912.

MORNING SESSION.

The convention was called to order at 10 o'clock by President Sam N. Warren.

COMMITTEES APPOINTED.

After the invocation the President announced the appointment of the following committees:

Resolutions—W. W. Ogilvie, of Marshall County, Chairman; Percy Brown, of Maury County; R. H. Dunbar, of Montgomery County; Edgar Waters, of Wilson County, and George P. Meadows, of Giles County.

Nominations—J. N. Meroney, of Maury County, Chairman; J. P. Grissam, of Jackson County; Paul Seavey, of Lawrence County.

HOG CHOLERA, BOVINE TUBERCULOSIS AND TEXAS FEVER—A \$5,000,000 PROPOSITION.

The President introduced Dr. George R. White, State Live Stock Inspector, who addressed the convention. His address follows:

Mr. President and Ladies and Gentlemen of the Institute:



I assure you that it affords me much pleasure to be accorded the privilege of appearing before you this morning and discussing three of the most widespread and dangerous diseases to the live stock of Tennessee—Hog Cholera, Bovine Tuberculosis and Texas Fever.

HOG CHOLERA.

Hog cholera is a highly contagious disease of swine, which is similar in many respects to typhoid fever in man. It causes ulceration of the intestines—typhoid fever produces similar intestinal ulceration. In hog cholera we usually observe haemorrhagic spots on the kidney;

the same lesion of the kidney is observed in typhoid fever. Hog cholera also produces a reddish discoloration of the skin; so does typhoid fever produce similar skin discoloration. Of all the animal diseases now prevalent in Tennessee, hog cholera causes by far the greatest financial losses. It is prevalent at almost all seasons of the year in most every county in the state.

The losses in Tennessee during the past year from hog cholera have been unusually heavy. Conservative estimates have placed the losses from this one disease during the past year in this State at from two to three million dollars. Any disease which causes a loss of two million to three million dollars in a single year in a State as small in size as Tennessee certainly deserves more than the passing consideration of the farmers, swine breeders and lawmakers; hence, I believe I am warranted on this occasion in directing your attention to this disease and its dangers to the swine industry. Its control and suppression is a problem.

As yet we have not seen our way clear to undertake systematic hog cholera eradication work. Possibly some future General Assembly may take the necessary appropriation to stamp out this deadly and widespread scourge to the swine-raising industry. At present all we can do is to advise the swine raisers to use the Dorsett-Niles anti-hog cholera serum freely at their own expense. State aid is out of the question at the present time. Whenever we can get an appropriation sufficiently large to establish, equip and maintain a hog cholera serum laboratory I will feel justified in undertaking the direction of hog cholera eradication work.

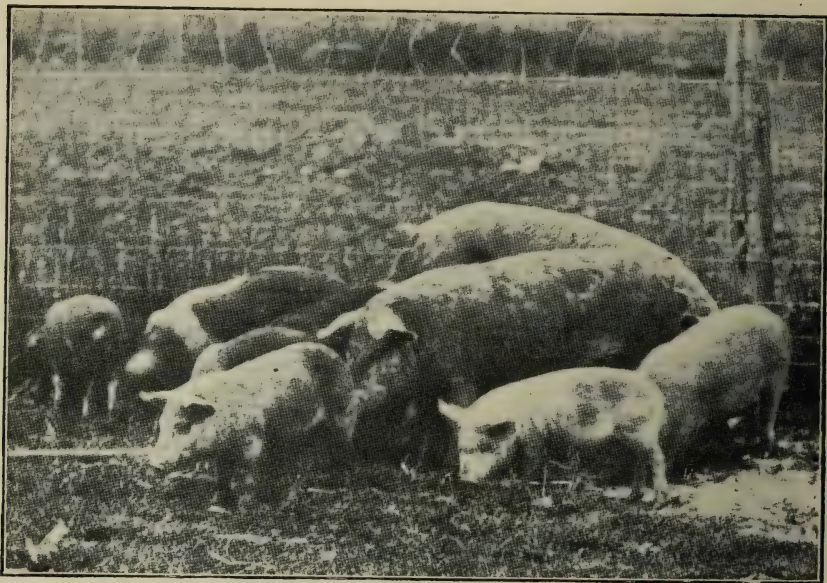
The free use of anti-hog cholera serum is the method by which we hope to eventually stamp out hog cholera. The Dorsett-Niles anti-hog cholera serum will certainly protect hogs against cholera, provided it has been properly prepared and scientifically administered; however, it requires some instruction before anyone is qualified sufficiently to handle this serum as it should be handled. We have found a great array of impotent serum on the market. Of course such serum will not begin to protect hogs against cholera. Remember a few ways by which hog cholera is spread and there is no occasion for you having an outbreak of this disease among your hogs, even in the absence of the use of anti-hog cholera serum.

METHODS BY WHICH HOG CHOLERA SPREADS.

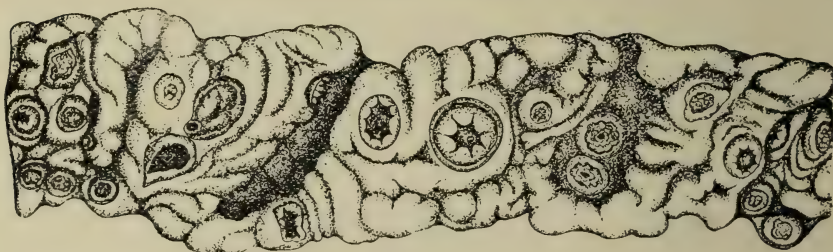
1. Running streams, such as rivers, creeks and branches spread cholera by washing the infection down stream from hog cholera outbreaks above; hence, it is unsafe to endeavor to raise hogs where they have access to running water.

2. Public roads are disseminators of hog cholera. Hogs affected with cholera are liable at any time to be passing and repassing on these public highways, hence it is unsafe to allow healthy hogs access to public roads.

3. Public Stock Yards—Every public stock yard in Tennessee and every other State is permanently infected with the virus of hog cholera;



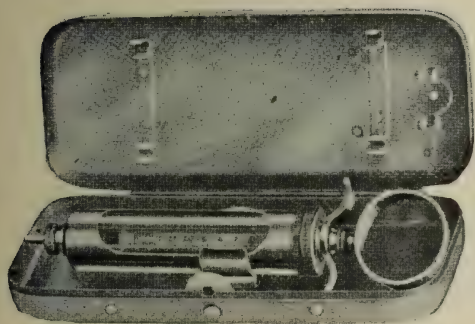
A Group of Cholera-Infected Hogs.



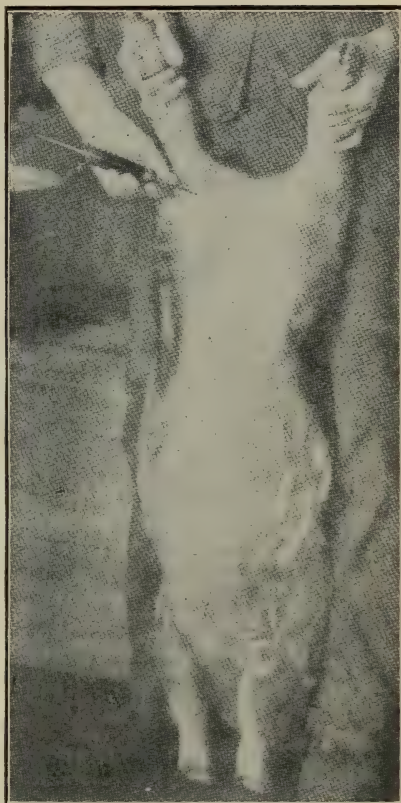
Ulcers in the Intestines of a Hog Dead of Cholera. The Same Character of Ulcers Are Observed in Typhoid Fever of Man.



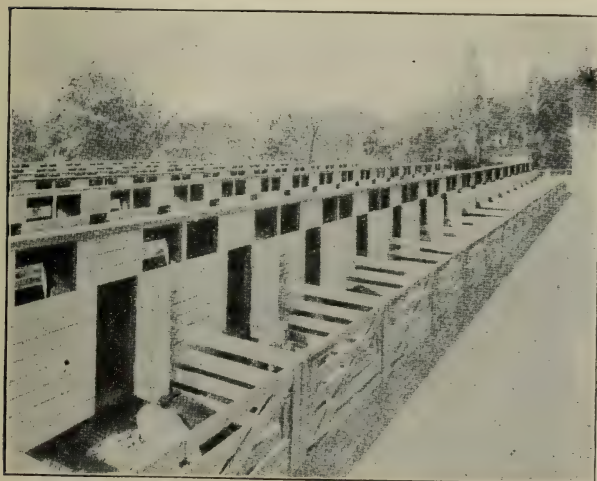
Hog Kidney Showing the Characteristic Lesions of Cholera. Observe the Black Spots, Which Are Diagnostic Lesions of This Disease. The Same Lesions Are Observed in Typhoid Fever of Man.



30 c. c. Hypodermick Syringe Used in the Injection of Dorsett-Niles Anti-Hog Cholera Serum.



The Administration of Dorsett-Niles Anti-Hog Cholera Serum. Observe Site of Injection.



Section of Pens Containing Hyper-Immunized Hogs, Which Are Producing Anti-Hog Cholera Serum.



The Turkey Buzzard, Which Is a Carrier and Disseminator of Hog Cholera and Many Other Contagious and Infectious Diseases.

hence, no man should even think of removing hogs from a public stock yard for breeding or feeding purposes. Whenever a hog goes into one of these public stock yards the only safe place for him is direct to the abattoir for immediate slaughter.

4. The Turkey Buzzard—Aside from public stock yards, I consider the turkey buzzard directly responsible for most of the outbreaks of hog cholera in Tennessee. If you dray the carcass of a horse or cow, or that of any other animal which has died of pneumonia, colic or any other disease, out on the farm and allow this carcass to be consumed by buzzards, the same buzzards which flock there in droves to devour this carcass may have come directly from a hog cholera carcass fifty or even a hundred miles away, bringing the infection to your farm and starting an outbreak of cholera among your own hogs. This emphasizes the importance of burning or burying all dead animals on the farm.

Many of the Southern States afford the buzzard legal protection. This accounts in part for their great numbers. At one time the buzzard was protected by law in Tennessee. At that time any one killing a buzzard was liable to arrest and fine. Of course when that law was passed no one had any idea that the buzzard was such a spreader of diseases.

Some people are under the erroneous impression that the buzzard at this time has legal protection in Tennessee. For their benefit I will say that the law protecting the buzzard was repealed in 1903. Since that date the buzzard has had no legal protection in this State. Any person can kill a buzzard without violating any State law. Since that is a fact, every good citizen should do his part towards exterminating the buzzard, as it is a menace to the live stock raising industry in Tennessee, on account of being a spreader of hog cholera and many other contagious and infectious diseases.

If all persons would make it a rule to bury all animals which die on their farm, then there would be no inducement offered the buzzard to visit their premises. Besides being an attraction to buzzards, the stench from foetid carcasses of large animals constitute a public nuisance in any community where they are allowed to decompose on the surface of the ground. Some effort should be made to induce the incoming General Assembly to pass a law compelling owners to either burn or bury all carcasses of animals which die upon their premises. Such a law at this time is necessary from a human as well as an animal health viewpoint. At any rate this convention should go on record as favoring the enactment of legislation of this character. Every farmer in Tennessee should acquaint himself with the State regulations relative to hog cholera, which are as follows:

"Section 30. That all public stock yards in the State are hereby placed in quarantine—as regards to the handling of swine—and all persons, firms and corporations are prohibited from removing swine therefrom for any purpose other than for immediate slaughter.

"Section 31. Hogs infected with or exposed to hog cholera shall not run at large, or be driven over ranges, commons or public roads; such hogs must be confined in strict quarantine. Carcasses of hogs that have died of cholera must be sent to a rendering tank, or must be deeply buried or completely burned."

BOVINE TUBERCULOSIS.

Since bovine tuberculosis is a contagious disease of cattle, which is readily transmitted indirectly from cow to man through the medium of the milk and meat, it is a disease of much importance from a human health as well as an economic viewpoint. Bovine tuberculosis is gradually on the increase in Tennessee. It is becoming more and more widespread each and every year. It is cheaper to eradicate tuberculosis now than it will ever be again. It is to a cattle owner's interest from a purely dollars and cents standpoint to eradicate tuberculosis from his herd, to say nothing of the protection of the milk consuming public from consumption of tubercular contaminated milk from such diseased cows.

Tuberculosis will put any man out of the dairy or cattle raising business as surely as hog cholera will put him out of the hog raising business. It requires a somewhat longer time to do it because tuberculosis is a more slow developing disease. The twentieth century dairyman and cattle owner cannot afford to allow even one tubercular

cow to remain in his herd, because one diseased cow now may mean five, ten or even twenty diseased cows six months or a year from now. Remember that there is absolutely no external or physical symptom or sign of tuberculosis in cattle.

Some of the fattest and apparently thriftiest looking animals are "rotten" with tuberculosis, whereas some of the poorest "old skates" on the farm are entirely free from this disease. Fat is no sign that a cow is tubercular, neither is being poor any sign that she is affected with tuberculosis. The tuberculin test is the only means by which any one is able diagnose tuberculosis with any degree of certainty in cattle.

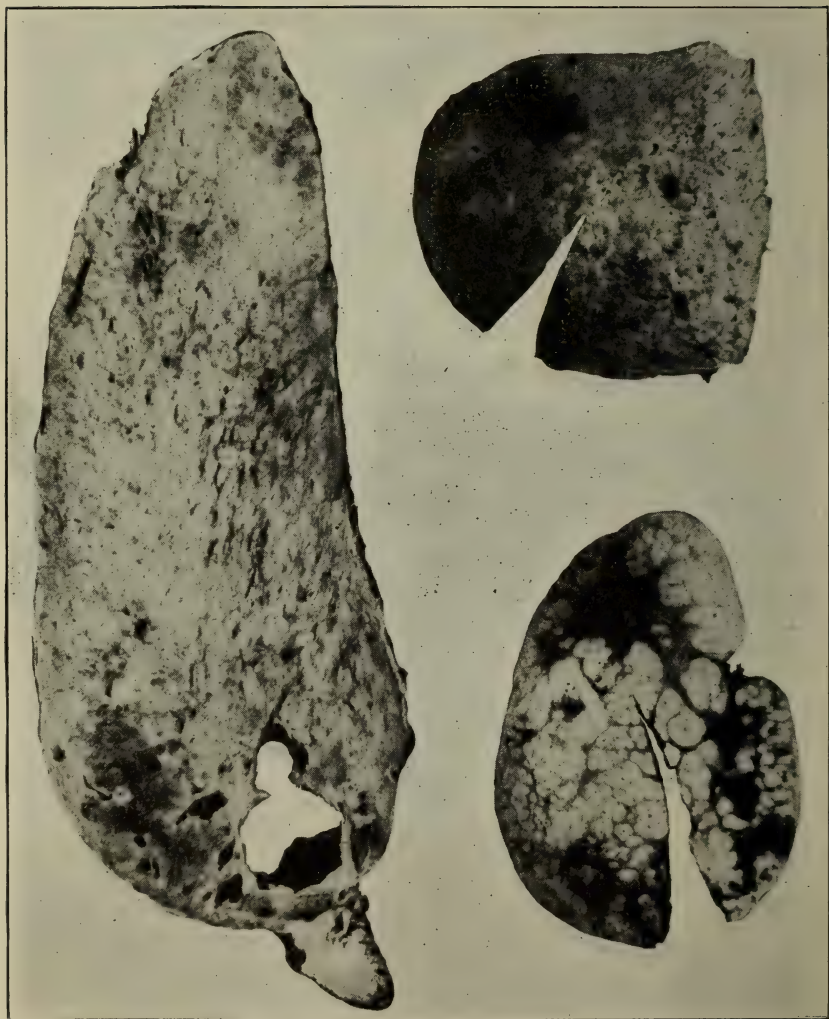
The tuberculin test is harmless when applied to healthy cattle. The tuberculin itself is the chemical product of the tubercle bacilli. It is a sterile product. There is no live germs in it. When injected into a healthy cow it has no effect, but when injected into a tubercular or diseased one it causes an elevation of the temperature at least two degrees. The tuberculin test is made about as follows: Begin taking temperature at 3 p.m. today; take the temperature again at 6 p.m. These two "post temperatures" are taken in order to determine the normal temperature of each individual cow. Inject the requisite amount of tuberculin with a hypodermic syringe at 6 p.m. Take the temperature again on the twelfth, fifteenth and eighteenth hour, after the injection of tuberculin, which will be at 6 a.m., 9 a.m. and 12 m. tomorrow. If at any time tomorrow the temperature rises two degrees



An Apparently Healthy Bull which Reacted to the Tuberculin test. On Opposite Page Is Shown a Quarter of Beef From This Animal. He was "Rotten" With Tuberculosis. Every Organ and Gland and Even the Bone Presented Lesions of Tuberculosis.



Quarter of Beef From the Animal Shown and Described on Opposite Page. Observe the Numerous Large as Well as Small Tubercles. This Demonstrates Positively That Being Fat Is No Sign That an Animal Is Free From Tuberculosis.



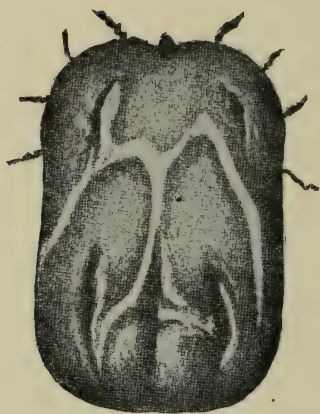
Tuberculosis of the Udder of a Cow. This Animal Was Furnishing Milk for Children to Drink.



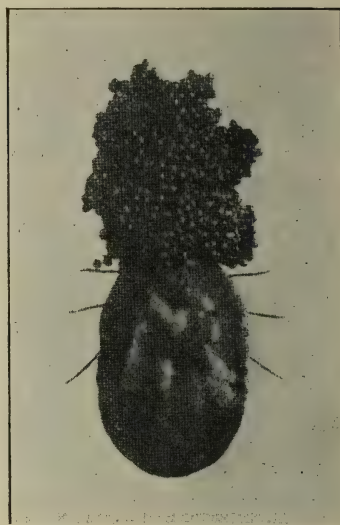
The State Prison Dairy Herd Was Tuberculin Tested by Order of Governor Hooper. Out of 63 Cows Tested, 16 of Them Reacted. The above illustration Shows the 16 Tubercular Cows Which Were Removed From the Herd.



The Above Picture Teaches an Object Lesson of Much Value. It Shows How Healthy Hogs Contract Tuberculosis by Following Tubercular Dairy Cows.



Engorged Female Tick. Having Completed Its Development on the Animal, and Having Been Filled to Its Entire Capacity With Its Host's Nourishing Blood, It Is Ready to Fa'll to the Ground, Where It Seeks Seclusion and Comfort to Deposit Its Eggs.



Mature Female Tick Laying Eggs. Each Female Lays From 3,000 to 5,000 Eggs.



Ticks of All Sizes Shingled on the Hide of a Cow, All Sucking the Life Blood.



This Animal Is Not Dead, but Dying of Tick-Infestation.

above what it is today it indicates tuberculosis in ninety-nine cases out of every hundred.

In my opinion it is possible and entirely practical at a reasonable expense and in a short period of time to entirely eradicate bovine tuberculosis from the dairy and breeding herds of this State. The present and future welfare of the live stock industry in Tennessee—to say nothing of safeguarding the people's health—demands that the spread of this disease be checked.

This convention should go on record as favoring the passage of the necessary laws and making adequate appropriation to the State Agricultural Department to enable it to take the necessary steps for the control, suppression and eradication of bovine tuberculosis without further delay. The farmers' as well as the milk consumers' slogan should be, "Get rid of tuberculosis now."

TEXAS FEVER.

Texas fever, the well-known and easily recognized fatal Southern cattle scourge, probably first invaded the United States from Mexico over a century ago. The infection gradually spread northward from the Mexican border until about forty or fifty years ago when it made its first appearance in Tennessee, and finally spread over fifty-one counties in this State. For many years its causative agent was unknown. It was in the year 1887 that Cooper Curtis was the first to suggest the tick as the carrier of the infection of this disease, but it remained for Smith and Kilborne, in 1889, to demonstrate that the tick did really transmit the disease.

Of course for many years no one knew or even suspected that it

was possible to eradicate this disease-producing tick. It was in the year 1894 that Cooper Curtis demonstrated the possibility of exterminating the fever tick. About this time the first bulletins on this subject were gotten out by Mohler, Dalrymple and Morgan. To Myer of Louisiana belongs the credit for presenting the first bulletin calling attention to the economic importance of eradicating the tick. He placed the annual losses to the Southern States at \$100,000,000.

The early field work was done by Butler, N. C., Cary, Ala., and Dinwiddle, Ark. They demonstrated that tick eradication over large areas of infected territory was practical. They demonstrated beyond a shadow of a doubt that ticks could be eradicated from any prescribed territory in a short time at a reasonable cost. In 1906 a committee from the Commissioners of Agriculture of the Southern States prevailed upon Congress to make the first Federal appropriation to begin the work. This appropriation amounted to \$82,500. Dr. R. P. Steddom and W. P. Ellenberger did the pioneer work in Tennessee, but to Drs. J. A. Kiernan and R. E. Jackson the credit is largely due for the excellent results which have been accomplished in this State.

As said before, the disease had spread to fifty-one counties, and the annual losses in this State from deaths of cattle from the disease and



A Group of First Prize Shorthorn Steers Which Were Bred and Raised on the Lespedeza Farm, Hickory Vallëy, Hardeman County, Tennessee. This Farm Is in a Tick-Infested and Quarantined County. However, the Lespedeza Farm Itself Is "Tick-Free." This Illustration Demonstrates the Possibilities of Successful Cattle Raising After the Fever Ticks Are Eradicated.

from the depreciation in value as a result of the handicap of quarantine restrictions far exceeded \$1,000,000. This work of tick eradication has gradually progressed until now we have succeeded in freeing forty-four whole counties of ticks and those forty-four counties have been released from quarantine. Only seven counties and parts of counties remain in quarantine.

These great results have been accomplished in only a few years and at a very small expense to the State, counties and Federal Government, when we pause to consider the manifold advantages to the cattle raising industry which have accrued therefrom. However, the work is not yet completed and the annual losses—even at the present time as a result of the existence of this disease—will probably exceed \$300,000.

Now is the opportune time to complete the work in all of these seven tick-infested counties if the cattle raisers in these counties could only be made to realize it. The tick can be destroyed now with less expense than later. The stockmen of these remaining quarantined counties can now profit by the experience of those who have already successfully conducted the work in the counties which have been freed of ticks and placed above the quarantine line. They have at hand the twentieth century method, the ideal way of killing ticks, viz., the concrete dipping vat and arsenical solution, which are the boon to, and salvation of, the cattle raising industry in the Southern States.

The dipping vat and arsenical solution are cheap and efficient as well as practical and are in my opinion the only weapons which will be used in the future in tick eradication work. From present indications the ticks will be entirely eradicated and the whole State of Tennessee released from quarantine one year from this date, in which event Tennessee will enjoy the distinction of being the first State to entirely exterminate the Southern cattle tick.

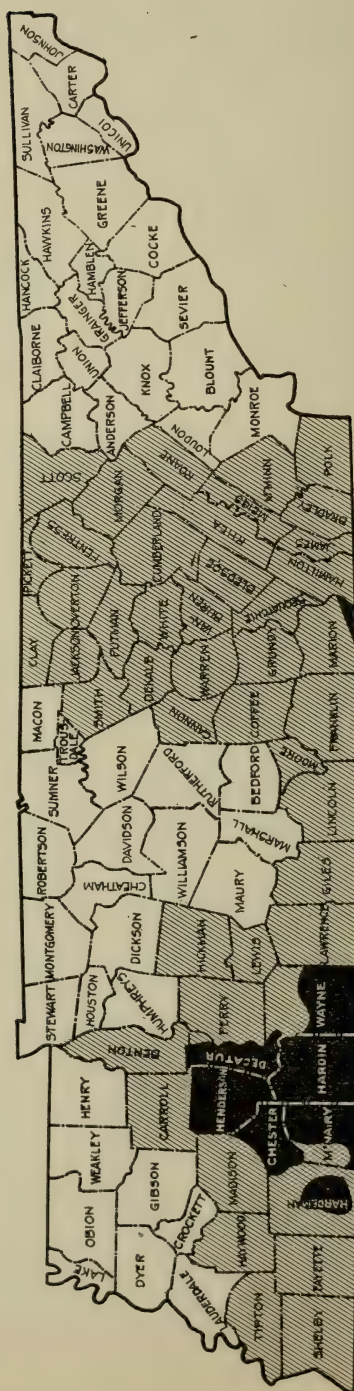
Gentlemen, every order and every rule and regulation which is promulgated by the Commissioner of Agriculture and State Live Stock Inspector has for its object the protection of the live stock industry of Tennessee as a whole. In protecting the industry as a whole we consider that we are protecting the individual interest of every live stock owner. In this work we solicit the cooperation of all good citizens, because with your cooperation we can do more work and get better results than we can possibly do without your cooperation. Talk up, not down, work we are endeavoring to do. Help us and we will help you.

I thank you.



Plan for concrete dipping vat

MAP SHOWING PROGRESS OF TEXAS FEVER TICK ERADICATION WORK IN TENNESSEE.



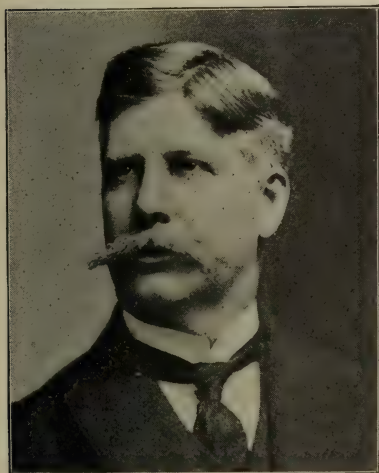
8 counties and parts of counties which are yet in quarantine on account of Southern cattle ticks. All of these counties are cooperating with the State and Federal Government in Tick Eradication work and it is only a question of a short time until they will be free of ticks and released from quarantine.

43 counties which have completed tick eradication and have been released from quarantine since the work started in Tennessee. This demonstrates the possibility and feasibility of tick eradication.

CORN CLUB PRIZES AWARDED.

The President introduced Judge Robert Ewing, of Nashville, who had been chosen to award the prizes to the winners in the corn growing contest.

In awarding the prizes to the boys, Judge Ewing said:



I am very sure, young gentlemen, that it gives me quite as much pleasure to present you, on behalf of the Board of Trade of Nashville, with these prizes as it does you to receive them. You have won them in a good cause, for no question of material prosperity equals that of making land yield abundantly, and this is what you have done most successfully. Corn is one of the greatest crops of our State, and it behooves every farmer in the State to understand how to prepare his soil for the reception of the seed, how to select the best germinating seed and afterwards how to cultivate the growing crop. These are

lessons which your fathers should teach you, but in your ambitious efforts you are reversing the order of things; you are teaching them. You have had the advantage of being taught, in a way, by such men as Prof. Holden of Iowa and Dr. Seaman A. Knapp, and you have availed yourselves of this teaching and have brought here to the capitol of your State the results of your work. Rest assured that you have a right to be proud, and every right-thinking man feels a pride in you because of your determination to show that Tennessee boys can do whatever other boys can.

If each of you boys made a study of the selection of your seed; if you plowed the ground deep to enable it to retain the necessary moisture; if you used that fertilizer which was most easily procurable and most beneficial to your land, you have accomplished much, for you have clearly demonstrated what, under these conditions, one acre can be made to do. Having done so well in a small way, you must now resolve to apply the same principles in a larger way and see next year if you cannot make five acres yield five times as much as the acre you have cultivated this year. If you do this and continue to progress in this way, and by your example inspire others to do likewise, no one can tell the effect on the State at large.

Our Legislature is paying attention to its Agricultural Department. It is presided over by a practical, intelligent man, who is able and willing to assist you; nothing will give him more pleasure than to reply to your letters and give you plain, helpful answers to all your ques-

tions. You must heed and follow his advice and good will be sure to come. We have a rich State; you must, by intelligent cultivation, help to keep it so. When you see your land is washing, stop this at once. Learn from letters to the Experiment Station at Knoxville all about your soil and what it needs, and go to work and give it this. Try to redeem each year an acre or two of worn soil; you can do it. The price of land is going up all the time and there's money to be made in redeeming the sedge-grass fields of Tennessee; clover, cow pea hay and other profitable crops will do it, and get them ready for the best yields of grain. I trust that the lessons you have learned and also taught this year will sink deep into the minds of many, and that they will resolve to do as you have done. I congratulate you, for you are showing yourselves the real wealth and hope of the State.

PRIZES AWARDED.

The prizes were delivered as follows:

Thomas Aymette, Pulaski, Giles County.

Roy Parkes, Pulaski, Giles County.

Breck Looney, Winchester, Franklin County.

Bryan Austill, Cowan, Franklin County.

Robert L. Byrn, Lebanon, Wilson County.

Frank Fisher, Walling, White County.

James Rankin, Hartsville, Trousdale County.

Frank Perkins, Hartsville, Trousdale County.

Leslie Morgan, Shelbyville, Bedford County.

Ellis Towry, Taft, Lincoln County.

Herbert McKibben, Culleoka, Maury County.

Among the above winners \$350 was divided.

WINNING COUNTIES.

On the score of fineness of type and quality the winning counties in order are: Giles, Franklin and Lincoln. The varieties of corn grown included Hickory King, Watson, Looney, Prolific, Hoffman, etc.

President Sam N. Warren interrupted the regular proceedings to extend the sincere thanks of the members of the institute to Hon. Charles C. Gilbert for the personal interest he has manifested in the convention. President Warren said Mr. Gilbert was known throughout the State as "Goods Road Gilbert," but he wanted to add one other title—that of the "Farmer's City Friend."

The President then introduced Dr. A. H. Purdue, State Geologist of Tennessee, who addressed the convention on "Soil Conservation."

Dr. Purdue's address follows:

THE IMPORTANCE OF SAVING OUR SOILS.



The approximate area of the earth is 197 million square miles. About one-fourth of this, or approximately 49 million square miles, is land. A large per cent of the land is located in the cold regions of the North, and is unfit for cultivation. Another large per cent is located in the densely forested regions of the tropics, and probably can never be successfully cultivated. Another large per cent is in mountain regions that are too rough and rocky for agricultural purposes. Still another large per cent is in arid regions.

Only about one-third of the land area, or approximately 16 mil-

lion square miles, receives an annual rainfall between 20 and 60 inches. A smaller annual rainfall than 20 inches makes a region arid or semi-arid. A region with an annual rainfall of more than 60 inches is not well suited to agriculture.

Quite a per cent of the land area receiving more than 20 inches annual rainfall is mountainous and is largely unfit for agriculture; but on the other hand, some of the semi-arid land can be used for farming purposes by the process of dry farming or by irrigation. While I am not able to give you a close estimate of the amount of tillable land upon the surface of the earth, it appears that 20 million square miles would be liberal.

Though you have often heard the statement that the soil is the chief source of subsistence, it is not out of place for that to be repeated here, or on any other occasion where the object is to impress people with an idea of the true value of land. Though we are not accustomed to think of them as such, air and water are important foods. These, with common salt, and fish, constitute practically all of our food material that is not taken from the soil. Aside from these, all of man's subsistence, including food, clothing, and shelter, come from the soil. Our food comes indirectly from the soil, through plants and animals. The soil is absolutely necessary for the existence of man; and its total depletion would mean the extermination of the human race.

For all practical purposes relating to the future of mankind, we can say that the land area of the earth, and consequently the soil area is fixed. On the other hand, the population of the world is rapidly increasing. From the best estimates that can be made the present population of the world is about 1,600 million. With an area of 20 million

square miles of land that can be successfully cultivated, this is an average of 80 people to the square mile. It is said that the population of the world has increased 250 per cent in the last hundred years. If the increase of population for the next hundred years is this great, there will be an average of 280 people for every square mile of good agricultural land. This means that if the average person consumes as much a hundred years from now 35 head of stock will have to be produced where now ten head are produced; that 70 bushels of wheat must be grown where now there are 20; that 140 bushels of corn will have to be grown where now there are 40; and that 350 bushels of potatoes will have to be grown where there are now 100. A hundred years is only a short distance in the future. At the present rate of increase of the world's population, or even at a greatly reduced rate, what will be its population 200, 500, 1,000 or 5,000 years hence?

All the foregoing statements are made that we might get some idea of the real value of an acre of land; but its true value cannot be appreciated until we consider the origin of the soil. The limited time at my disposal will permit of my saying only a few words on this subject with the hope of impressing the idea that the process is a very, very slow one. Soil is only finely broken up rock, mixed with a small amount of humus. The breaking up of the rocks is brought about by temperature changes, by the roots of plants, by the work of animals, by ice formed within the rocks, and by water moving through them and in other ways.

While rocks are being changed into soil, a portion of the soil is removed from hill slopes by the wind, and by the water running over the surface. The thickness of the soil upon hill slopes, is the difference between what has been formed by the rock disintegrating process and what has been washed away. While our hill slopes were covered with forests, the roots of the trees, and the decaying leaves reduced the hillside wash to the minimum. When the hills were cleared of their forests and placed under cultivation, the amount of wash was at once changed from the smallest amount possible to the largest amount possible.

Strange as it may appear, the people of the United States have not until just recently become aroused to the importance of saving their hillsides from wash; and an idea of the importance of doing this is not yet nearly as prevalent as it ought to be. We have heard a great deal within the last few years about conservation of coal, oil, gas timber, and water power. There is no means of comparing the relative waste of these products to that of soil from hillside wash, but I have no doubt that the waste now going on from washed soil is greater than the waste from all the other things combined.

It probably is no exaggeration to say that in West Tennessee there are hundreds of thousands of acres of land that not many years ago were in a good state of cultivation, but are now so gullied as to be entirely worthless, and are thrown out on the commons. A short time ago a man told me that only a few years ago he purchased 1,500 acres of this land at 60 cents an acre. The land of Middle Tennessee is not

gullied like that of the western part of the State, but I suspect the actual loss from waste is equally as great, and is much more serious. It is more serious for the reason that the soil of the Central Basin is thin. The rocks on an average are only a few feet from the surface. In many places the soil has, in patches, all been removed down to the rocks, rendering the land worthless. The Central Basin of Tennessee has long been considered, and rightly so, one of the most prosperous parts of the South. It cannot continue as such unless the farmers see to it that the deplorable waste from wash is stopped.

It is not possible in a short talk to consider methods of preventing wash. If I in but a measure impress upon you the importance of doing so, the purpose of my talk will have been realized. But remember that wash is produced by the water that runs over the surface, known as *run-off*. The way to prevent wash is to stop the run-off. One means of doing this is to plow deep. This reduces the run-off, because it loosens up the ground to considerable depth and permits the water to soak in. The furrows should not be up and down slopes, but should be parallel with the bases of the hills, or as we say with the contours. If a gully starts on the hill side, stop it at once. The means are usually simple, and are known to all of you. Put a little brush or straw at the mouth to catch the wash, and another small amount at the head to stop it from working back. Where it is necessary to do so sod the gully over with grass, such as Bermuda, Japanese clover, or red top. In those cases where simple means will not prevent water from collecting along the lines of the gullies a line of drain tile may be put in along the bottom of the gully extending down the hill and opening out at some desirable place. This will prevent the wash by carrying off the water beneath the surface instead of on the surface.

Terracing is another means of preventing wash, but farmers do not take to it, because of the inconvenience in farming produced by the terraces. The soil of hill sides of average slope can be saved without terracing, but it is necessary on steep slopes, and the sooner it is resorted to the better.

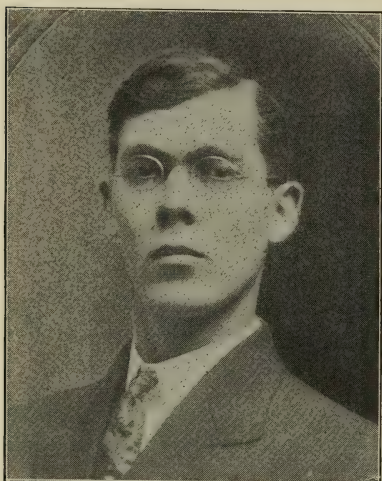
If our soils are saved from destruction by wash it must be done by the farmers themselves. And if, in this brief talk, I have said anything that has impressed even one of you with the idea that the men of the present are only holding the soil in trust to pass on to future generations, and that it is among our highest duties to prevent all the wash possible, my talk has been fully worth while.

Hogs do not make as large gains during cold weather as they do during mild weather, hence there is an advantage in forcing the pig and putting him on the market at an early date.

The prospects for a good olive crop in Tuscany are favorable. The blossoming was abundant, the fruit is developing in a normal manner, and no insects have appeared to date.

WHAT I SAW AT THE STATE FAIR.

Alton C. Greer, a boy of Bledsoe County, who was attending the institute as a guest of the State Fair, was presented and read his prize-winning essay on what he saw at the State Fair. Mr. Greer was a member of the Boys' Encampment at the Fair. His essay follows:



While at the fair during the week of September 16-21 I saw many thing which were both interesting and very instructive to me. To mention all that I saw would be impossible, but in a general way I can mention those features of the fair that were most interesting to me.

I saw live stock of almost any and every description found in the State, excepting scrubs, which I did not see any of. There were horses from the large, heavy draft types to the small Shetland pony; jacks and jennets; mules that any farmer boy ought to be proud to drive; excellent breeds of beef and dairy cattle, some of them weighing 2,000 pounds and over; some of the best breeds of hogs and sheep for the practical farmer; goats that would relish a sprout thicket more than hay; and poultry that our mothers and sisters take a delight in caring for.

In the agricultural department I saw excellent samples of corn, small grains, grasses, clovers and other forage crops.

The horticultural exhibits were equally as good as those in the agricultural department. The vegetables were such as any good housewife would be proud to place upon her table, and the fruits demonstrated the results of proper care and management. To the boy who is accustomed to seeing only wormy and rotten-specked fruit it would seem almost impossible to grow such nice, smooth apples, uniform in size, shape and color; but right here was a clear demonstration that it can be and is being done. In the agricultural and horticultural departments combined I saw the most nearly complete collection of the products of Tennessee soils that I have ever seen.

In the woman's department I saw fancy work of almost every description, which seemed to me to be almost perfect in design and workmanship. Also canned goods and cooked foods, which presented a splendid appearance, and I am sure would have tasted equally as well as they looked.

To me the various exhibits of farm machinery by the different companies made a very interesting feature of the fair. There were, I believe, machines and implements of every kind adapted to the planting, cultivation and harvesting of Tennessee crops, labor-saving devices for the farmer's wife, etc. Many of these were in motion, though, of course, not many of them were doing actual work, but there was every indication that they would do it when put into the field. Here was the place for the farmer to see and study the machine or implement adapted to his own individual requirements, and any of the men in charge were ready to give him any information he might ask regarding their machines.

I will now mention some of the things which I learned. I learned that there are two distinct types of cattle—a beef type and a dairy type. I saw very clearly that the beef type is not adapted to the production of dairy products, for the cows of this type with all the feed and care they had received had simply put on fat and had failed to develop scarcely any udder at all, while the dairy cows had developed large udders and were producing a good flow of milk, rich in butter fat, instead of putting on so much fat.

In judging the stock I noticed that trueness to the given type had much to do with the rating of an animal, whether it were a horse, cow, hog, sheep, goat, or even a bird in the poultry department.

Then, too, while in camp we listened to several good lectures which were very instructive to a boy who wished to learn. Prof. Morgan told us that if a rotation combining the growing of legumes with the grains commonly grown were followed, and the crops fed to stock upon the farm, carefully returning the manure to the land, that we would not need to buy any commercial fertilizer except phosphoric acid.

Prof. Wilson gave us some points upon stock-raising and judging, and Dr. White told us about some of the most fatal diseases of stock, and gave us some methods of treatment. Prof. Keffer also gave us a good address upon fruit-growing.

From seeing the exhibits and listening to these men talk, I learned many other things which I haven't space to mention in this essay, but I really believe I learned more about the real business of farming, the proper care of livestock, etc., from the lectures than from examining the various exhibits of the fair.

Now, in closing this essay I wish to thank those gentlemen of the State Fair Board who were kind enough to offer this opportunity of seeing the fair. By taking advantage of the opportunity I have gained an inspiration to do my part towards making Tennessee one of the foremost agricultural States of the Union.

THE FARMER'S BEST CROP.

Mrs. Rose Nipher, of Leoma, Tenn., addressed the convention on "The Farmer's Best Crop," in which she emphasized the fact that this best crop consists of the boys and girls. Incidentally she urged compulsory education.

Her address follows:



Twenty years ago men would have laughed to scorn the idea of farmers coming together to discuss their occupations. The farmer was the butt of ridicule, and the funny man took delight in exposing to view the ignorance of the "hay-seed."

Changed conditions, however, bring new ideas, and the trend of thought now is countryward. There never was a time perhaps when so much consideration was given to farm life by men and women of all classes. Colleges and schools have added the study of agriculture to their curriculum.

No department in our government commands wider attention than the department of agriculture. Its many directors are men of science, each a specialist in his own line.

We have our demonstrators who show us how to grow corn, cotton, and tomatoes. Thousands of dollars have been expended experimenting in the care of the soil to ascertain how to produce the greatest yield.

We have men to instruct us as to the care of stock and poultry. We talk of balanced rations for them. In fact in this day of progression we are told how best to equip our farms, but, to my mind, the most important farm crop has been overlooked—left without a director or scientific consideration.

I am reminded of a good old farmer whom I met not long since in West Tennessee. After telling me in a very fluent manner how much ground he cultivated, the yield per acre, the number of cattle, horses, and hogs he owned, I said to my friend: "Now tell me about your family—how many children have you?" With some hesitancy he replied: "Let me see; there is John, Mary, Lucy, and—well, I do declare! Wife, how many have we?"

I do not presume that father is here, nor do I think this condition exists in every home; but, friends, you will agree with me that we have in a great measure neglected our boys and girls—the farmer's best crop.

As I look into the faces of the boys and girls of Middle Tennessee I see before them great possibilities. I think of them as the men and women of tomorrow—our future citizens. Will they be our farmers and farmers' wives? Apparently not!

To my knowledge within the past seven years in a restricted area from twenty to twenty-five bright, capable young men have left the farm for other occupations.

I have in mind a family of four sons, all of whom left the farm for city life. In this same family were four daughters who married city men. *You* no doubt can call to mind many such instances, and we have not mentioned the girls who have gone to the cities to eke out a miserable existence.

Why is it thus? A distaste for the seeming drudgery of farm life, a desire for more congenial surroundings, a longing for something to call their own; and, perhaps no small factor, is a lack of common interest between parents and their children. Really some of us are like the good old farmer of West Tennessee—not well enough acquainted with our family.

The little one comes into the home a tender plant. The surroundings have much to do with its growth. As it takes sunshine, pure air, fertilizer and cultivation to grow good grain, likewise it takes sunshine, pure air, fertilizer and cultivation to grow good boys and girls; and, when I say good, I do not mean only good, but good-for-something boys and girls. It takes the sunshine and pure air of a happy home; it need not abound in wealth and luxury, but a home where love, gentleness and peace abide, where consideration for one another rules supreme. The fertilizer of good companionship—by this I do not necessarily mean the companionship of the great, but association with those of high ideals and clean lives. Oftentimes good books, suitable magazines and music wield a greater influence for good than people.

The cultivation of right training. Some one has asked when ought the training of a child to begin. The answer comes with its great-great-grandfather; another has said 100 years before its birth. However this may be, it is the right of every child to be well born, and with its advent into the home comes our responsibility.

The child has a three-fold nature—physical, mental and moral. To be strong mentally and morally he must have a strong body. Early in life lessons of truth and purity must be taught. The little one should know something of his bodily life and how to care for it. The physical training now considered so necessary in the city schools should be added to our country schools. The best of everything is not too good.

The mental training we leave almost entirely to the school teachers. Let us see to it that these are the very best, not the most learned perhaps, but men and women of good Christian character, who are conscientious, not working alone for the money but for the good of the lives entrusted to them.

When we become thus interested in the mental training of our children then will we have better buildings, longer terms and a more regular attendance at school.

This last thought brings to my mind an article I read the other day, entitled "Too Many Chores." Two little boys were herding sheep in the stubble. It was a bitter cold wind that was blowing, and their clothing was none too warm. A gentleman was passing along the road when one of the little fellows inquired of him the time of day. The smaller one with trembling lips said, "Mister, I wish there weren't any sheep." Here were two boys whose love for the farm was ebbing fast. These boys were about eight and ten years old, and should have been in school. Perhaps not so much stock raising on some farms would give the boys a better opportunity to learn the attractions, rather than practice the drudgery. When I see the boys in the cotton field, in the corn field pulling fodder, or at the sorghum mill, I am persuaded that a large per cent of the farm produce is grown at the expense of the education of our children.

COMPULSORY SCHOOL LAW.

As to the *moral training*, we have the church and Sunday school, you say; but is this enough? No, for ere your child is old enough to attend religious service the weeds have begun to grow. Some one has said, "Give me the first seven years of a child's life, then change him if you can." Early impressions are the lasting impressions. It is in the home we should begin this cultivation, with sowing seeds of obedience, truth, honesty, sobriety, uprightness, supplementing this with the church and Sunday school training and with as good a public school education as is possible, even then our children have but come into possession of their own. All this is their right; justice demands even more. Not many of us feel that we can afford to give our children a college education, but today with the farm demonstration work, corn and tomato clubs, the agricultural college is brought to our door.

I cannot sing loud enough the praises of these two mighty factors, which I believe is the beginning of a means toward an end of solving the great problem, "How can we *keep* our boys and girls on the farm?" I urge you to let your boys and girls join these clubs at the earliest age possible. Take an interest in it; encourage them. No only will it prove a financial benefit, but many valuable lessons can be gotten as well. Listen:

It teaches business, upon a business basis. Rent to each child the required acreage of land. As nearly as possible the work must be done by the individual. An account must be accurately kept of the cost of the crop, and all expenses paid therefrom; and what about the money over and above the actual expense. Let the boy have it for his own. Let him invest it in something. You say he will make a bad deal, or lose it altogether. Counsel with him. Take him into partnership with you—but mind; don't take the advantage of him because he happens to be the younger member of the firm. I know of a case like this. A father said to the son, "If you will take that stunted calf and feed it up, you may have it."

The boy, delighted with the prospect of ownership, began the task—and, oh! how many things he would buy with the money when he sold his possession. Alas! John's calf was sold, but it was father's money. This is enough to discourage our boys on the farm.

I think I never knew of a better opportunity for our farm girls than the tomato clubs. While I do not advocate hard farm work, I do believe it is good for them to do such gardening as they are able. It is well for our girls to understand plant life, and what more beautiful plant could have been chosen than the tomato? While working with this it will arouse an interest in other vegetables, as has been proven.

It broadens one's life to come so closely in touch with nature; not only this, it is remunerative as well. It is well for them to get a little glimpse into the business world. From personal knowledge I know of a tomato club girl who this year from one-tenth of an acre supplied a large family with fresh tomatoes

Sold fresh to the market	\$ 3.40
Sold canned goods	2.70
Sold other products	28.15
	2.25

\$36.50

This girl of fourteen became so interested that she bought a canner and helped mother can corn, beans, beets, apples, peaches and berries, helped to make jelly, jam and pickles and had a good display of her goods at the county fair. I want to say that when this girl was asked if she would be a member next year she said, "I sure will!"

Let me tell you about two little girls who worked one-tenth of an acre together, and from their plot put up two thousand cans of tomatoes. I could give you other examples, but this is enough. What these girls have done your girl can do.

Let us get a vision of what this means to our farm girls. We can not stress this work too much. It reveals a new world to them.

It will arouse a new interest in home life. It will make better cooks, better home-makers. It breeds contentment. It gives them some money to spend. Do you know I sometimes think the reason girls marry at fourteen, sixteen and eighteen is because they feel it a burden to depend upon father for every cent they spend? I have often thought that if parents would give their children an allowance or a little compensation for services, it would prove a paying proposition to all concerned.

Before I close let me bring to you the picture of the living room in a farm home. It is a cold night; the chores are done early; supper is over, and in the living room there is a warm fire in the big fireplace. Around the reading table, in the center of which burns a bright light, and seated in comfortable chairs are the children with father, each engaged in his line of reading or study, with a lull now and then for pleasant conversation, or for some one to read aloud an article of special interest, or perhaps to talk over the market prices. And see the good mother who sits close by, now and then engaging in the conversation as she is busy at work. We ought to have time for that and reading; in short, we farmers and farmers' wives and children ought to be the happiest people. With this picture before you, if son or daughter decides to leave the farm, can we doubt the wisdom of such cultivation?

It is said that many of the leading business men of our country were sons of farmers. History tells us that the farm has produced many scientists, professors, doctors and lawyers. We know that the following Presidents came from the farm: John Adams, Polk, Filmore, Van Buren, Pierce, Lincoln, Garfield and Benjamin Harrison, while Washington, Jefferson, Madison, Monroe and Taylor were sons of planters.

In conclusion, as we return to our homes to put into use what we have heard, let us not forget that the farmer's best crop is his boys and girls. And let us give them every opportunity to be what in their best moments they would love to be.

Mr. Meriwether, of Montgomery County, read a paper on "How to Make Clover Grow."

RESOLUTIONS.

The report of the Committee on Resolutions was presented and read to the convention.

Following are the resolutions, which were unanimously adopted by the convention:

1. We, the farmers of Middle Tennessee, in convention assembled, congratulate the people of the State on the prosperous condition of the agricultural interests, and note with pleasure the large attendance at this institute, and construe the marked attention to the addresses and papers as indicating an increasing interest on the part of the farmers of this section in improved and scientific methods of agriculture, and augurs well for the farming and live stock interests of the State.

2. We recommend a continuance of the liberal support heretofore accorded the farmers' institutes by appropriations for work along this line. The institutes are a powerful factor in developing a more scientific and economical husbandry and their benefit has been generally recognized and appreciated.

3. The plan of work mapped out and now being executed by the Commissioner of Agriculture, Capt. Thomas F. Peck, is doing a great work in spreading a knowledge of scientific agriculture in Tennessee and fostering the interests of the farmers of the State, and we heartily indorse his administration of the affairs of the Department of Agriculture. We recommend to the incoming General Assembly liberal appropriations for the work of this department.

ENDORSE THE PLAN.

4. We commend and endorse the proposal of the Department of Agriculture to establish county demonstration farms in each county of the State, in order that the work of the experiment stations and the agricultural college may be brought into convenient reach of all the farmers of the State. For this purpose we recommend that all revenues collected by the Department of Agriculture from the sale of fertilizer tags and feed and seed inspection stamps, above the amount necessary to enforce and carry out these laws, be appropriated.

5. We recommend that the General Assembly make an adequate appropriation to continue and enlarge the work of the immigration bureau, operating under the direction of the Commissioner of Agriculture. Valuable work has been done by the bureau of immigration in advertising the resources of the State and its advantages as a farming and live stock section, and a continuance of this work on a larger scale should be provided for. Within the last year many desirable immigrants have been brought to the State through the efforts of the Bureau of Immigration.

6. We recommend that the money paid by the lady delegates, members of the home-makers' section of the Middle Tennessee Institute, be set aside and used for the furtherance of the work of this association, and that it be expended under the direction and on the order of the Commissioner of Agriculture. We indorse the following resolution, adopted by the Home-makers' Association at the meeting which adjourns today: "We, the members of the Home-makers' Association, of the Middle Tennessee Farmers' Institute, ask our State Legislature to make a generous appropriation to aid our organization to take to the women on the farm the scientific training that will help the wife and mother keep step with her farmer husband."

7. We heartily indorse the action of the Board of Trustees of the Tennessee State Fair in re-electing to membership in that board our retiring president, Hon. Sam N. Warren, of Spring Hill, Tenn., and take pleasure in commending him as a man thoroughly conversant with the needs of the farmers of the State and in hearty accord with the State Fair Board in its efforts to have a great annual exhibition.

GOOD ROADS.

8. Realizing that one of the greatest needs of the farmers of Tennessee is good roads, and further realizing that the farmers of Tennessee can, by their determination and co-operation, improve the public road conditions throughout the State, we favor the creation of a highway department of the State government for the purpose of giving information and engineering advice to any section of the State where same may be desired.

9. Appreciating the fact that corn is the leading crop of the State of Tennessee, and realizing the advantages which would come to every corn grower in the State by having an annual corn show, where the best corn grown could be exhibited, we endorse the suggestion made at this session to hold an annual Tennessee corn show, beginning with next December, the same to be held in Nashville at the same time as the meeting of the Middle Tennessee Farmers' Institute.

EXPERIMENT STATION.

10. We favor a reasonable appropriation to the State Experiment Station for the purpose of manufacturing and conducting further experiments with the Dorset-Niles anti-hog cholera serum.

11. We recommend that the money collected from delegates on the validation of their certificates for return be used—first, for the publi-

cation of the proceedings of the institute, and the expenses of conducting this institute, and that \$250 of the surplus be appropriated to the Seaman A. Knapp memorial fund.

We extend the thanks of this institute to George T. Renfro, superintendent of the capitol, for his courtesy in allowing us the use of the Hall of Representatives for our meetings.

KNAPP MEMORIAL.

Whereas, we have heard with pleasure from Mr. Thomas A. Early, agent of the Knapp memorial committee, and from others of the plans to develop near Nashville an ideal demonstration farm, country community and school of country life in memory of the late Seaman A. Knapp, great benefactor of the South, and

Whereas, we are thoroughly convinced that this school of country life and this demonstration farm will constitute a most fitting memorial to this great and good man, and will be a most effective agency for the improvement of our country schools, of agricultural methods and of country life; and,

Whereas, the General Education Board has in the last ten years already contributed over \$1,000,000 toward farm demonstration work in the South, and has offered \$250,000 as an endowment to meet the current expenses of this school of country life; and,

Whereas, the Knapp memorial committee is asking the farmers and their friends in the South, who have so largely profited by the demonstration work under the leadership of Dr. Seaman A. Knapp, to raise \$150,000 with which to provide a farm, erect buildings and equip the school of country life; therefore, be it

Resolved, that we, the Middle Tennessee Farmers' Institute, do most heartily approve and endorse the Seaman A. Knapp school of country life and the plan of the Knapp memorial committee to raise this \$150,000 in the South.

Resolved, further, that we pledge to this cause our support and commend it to the farmers and business men of Middle Tennessee. We call upon those who are to be such large beneficiaries of this work to contribute to the extent of their means. We especially commend this agency for human betterment to men and women of means, who believe in the value and in the improvement of country life in Tennessee and in the South.

TEXAS FEVER TICKS.

Whereas, Texas fever tick eradication work in Tennessee has progressed satisfactorily under the direction of the Federal government and the State; and,

Whereas, the completion of this work and the release of the whole State from quarantine at the earliest possible date is greatly desired;

Be it resolved, that we go on record as favoring the same appropriation to the Agricultural Department (\$8,000) by the incoming General Assembly for this work as was made by the last General Assembly.

Resolved that we heartily endorse the State Fair and recommend to the coming Legislature that liberal appropriations be made for the necessary equipment, such as buildings, and for premium lists. That no institution of education offers better opportunity for instruction of the masses than the State Fair.

LIVE STOCK.

Whereas, the live stock breeding industry of Tennessee has been and is greatly retarded by the transmission of numerous hereditary defects and unsoundness from diseases and unsound stallions and jacks; and

Whereas, in our opinion, the time is ripe for some radical reforms in breeding requirements; be it

Resolved, by the Middle Tennessee Farmers' Institute here assembled, that we go on record as favoring the enactment of a just and reasonable stallion and jack inspection law.

BOVINE TUBERCULOSIS.

The following additional resolution was unanimously adopted:

Whereas, bovine tuberculosis is universally recognized as a deadly and dangerous disease, not only to cattle and hogs, but to the milk and meat-consuming public; and,

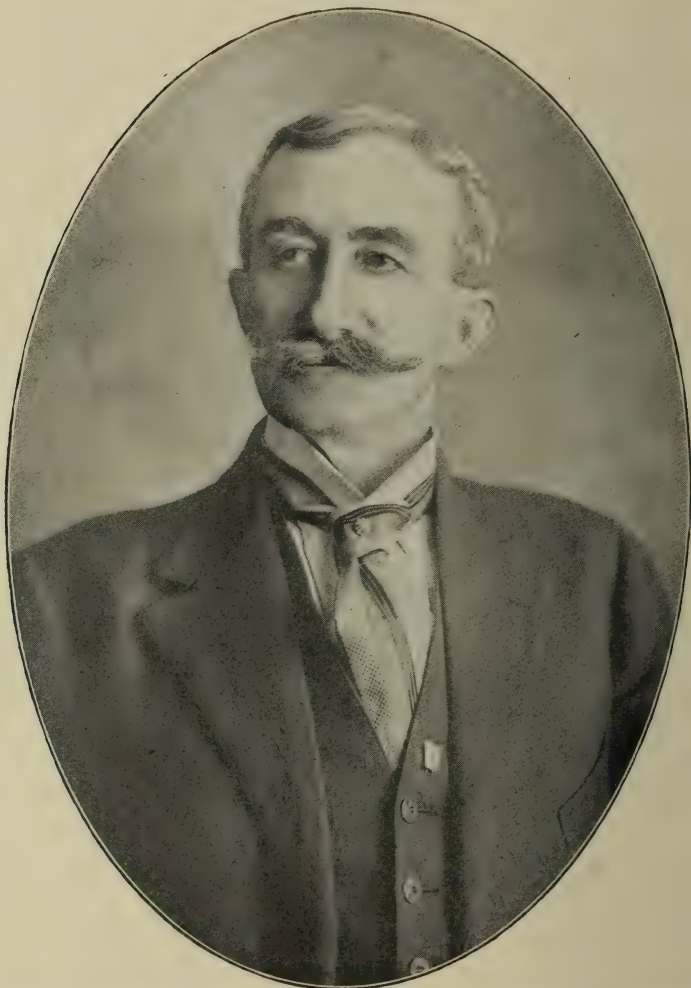
Whereas, the available statistics plainly show that this disease is rapidly on the increase each and every year in Tennessee; and,

Whereas, in the opinion of those in position to know it, it is possible and entirely practical at a reasonable expense in a short period of time to entirely eradicate bovine tuberculosis from the dairy and breeding herds of this State; and,

Whereas, the present and future welfare of the live stock industry of Tennessee—to say nothing of safeguarding the people's health—demands that the spread of this disease be checked:

Be it resolved, that we urge upon the incoming General Assembly the importance of passing the necessary laws and making an adequate appropriation to the State Department of Agriculture to enable it to take the necessary steps for the control, suppression and eradication of bovine tuberculosis without further delay.

Be it further resolved, that the secretary be directed to send copies of these resolutions to the Governor, Commissioner of Agriculture and to the chairman of the agricultural and sanitary committees of both lower House and Senate immediately after the organization of these lawmaking bodies."



Robert Gallagher, President Middle Tennessee Farmers' Institute.

ELECTION OF OFFICERS.

The report of the Nominating Committee was then presented to the convention. The committee recommended the following as officers for the ensuing year: President, Robert Gallagher, of Bedford County; Vice-President, W. W. Ogilvie, of Marshall County; Secretary, T. G. Settle, of Davidson County.

The report of the committee was received, and there being no other nominations the report was unanimously adopted, and the gentlemen named were elected as officials of the institute for the ensuing year.

The convention then adjourned until the next regular meeting in December, 1913, the exact date to be determined later.



T. G. Settle, Chief Clerk Department of Agriculture and Secretary Middle Tennessee Farmers' Institute.

MONEY FOR KNAPP FARM.

The members of the Farmers' Institute for Middle Tennessee, during its session in Nashville in December, contributed about \$1,000.00 toward the amount necessary to be raised for the establishment, in connection with the Peabody School for Teachers, of the Seaman A. Knapp Farm and School of Country Life.

Many individual subscriptions were received, and the Institute as a body contributed \$250.00 from the amount collected by the Secretary on the validation of certificates for return of delegates.

Thomas A. Early is in charge of the work of raising the \$150,000.00 necessary for the establishment of this School of Country Life at Nashville, and is very hopeful of having the necessary amount subscribed in a short time.

MIDDLE TENNESSEE INSTITUTE FUND.

By resolution of the Middle Tennessee Farmers' Institute at its session in Nashville in December, 1911, the Secretary was directed to collect from each delegate one dollar on the validation of his certificate for return transportation.

This resolution was put into effect at the meeting in Nashville, December 3, 4 and 5, 1912, and \$2,422.00 was collected by the Secretary. Of this amount, \$250.00 was paid in by the ladies in attendance on the Homemakers' Association, and this amount has been placed to the credit of that association. The balance, \$2,172.00, has been placed to the credit of the Middle Tennessee Farmers' Institute. These funds are in the hands of T. F. Peck, Commissioner of Agriculture, as trustee.

By resolution, the Middle Tennessee Farmers' Institute appropriated \$250.00 to the Seaman A. Knapp School of Country Life.

The cost of printing the proceedings of the Institute and the Homemakers' Association will be taken from these funds, and the balance will be used for the benefit of the Institute.

PRIZES AWARDED POTATO CLUB BOYS.

One of the most interesting features of the Farmers' Institute was the Boys' Potato Club exhibit from Cumberland County, in charge of J. E. Converse, of Crossville, a representative of the United States Department of Agriculture in that section.

Mr. Converse had fifteen boys present, and each one brought a peck of potatoes grown by himself under the direction of Mr. Converse. The following history of the Potato Club, with an announcement

of prizes awarded at Crossville, is taken from the Crossville Chronicle:

In each instance the boy planted half an acre and counted the rental value of land at \$5.00. Marketable potatoes alone were counted.

FIRST PRIZE FOR QUANTITY.

Green Taylor, Creston, won the first prize for the largest yield. He grew 192 bushels and 14 pounds of marketable potatoes, which would have been 384 bushels and 28 pounds to the acre. When it came to the question of profit this boy fell to third place, but received two prizes which netted him \$58. He was further awarded \$25 to help him attend the short course in agriculture at the State Experiment Station, Knoxville, which will open next month. This makes him a cash winner all told of \$83. He planted the Big Divide potato.

SECOND LARGEST YIELD.

Edward Hyder, son of Noah Hyder, Crossville, won the second prize for the largest yield. He raised 189 bushels and 20 pounds at a cost of \$30.15, which made his potatoes cost him 16 cents a bushel and gave a total net profit of \$60.80. This boy stood first in point of profit and he also received the \$25 for the short course. The boy is only 13 years of age and his father has agreed to go to Knoxville with him for the four weeks he will attend the short course. He received prizes on the two points of yield and profit, which gave him a cash premium of \$61. He planted the Green Mountain potato.

THIRD PRIZE.

Joe Stevens, son of W. P. Stevens, Peavine, was winner of the third prize for largest yield. He also received fourth prize for profit. He received in cash \$26. He raised 172 bushels and 37 pounds at a cost of a little less than 28 cents a bushel, or a total cost of \$50.77. He planted Carman No. 1.

FOURTH PRIZE.

Garrison Morrow, son of Jere Morrow, Creston, won fourth prize for largest yield. He received a cash prize of \$13. He raised 164 bushels of potatoes at a cost of nearly 35 cents a bushel. His net profit was \$25.80. He planted the Early Rose. He estimated that fifty per cent rotted.

FIFTH PRIZE.

Samuel Tollett, Jr., son of Samuel Tollett, Creston, was awarded the fifth prize for the largest yield and fifth prize for largest profit. The boy received cash to the amount of \$10. He raised 163 bushels and 52 pounds from a large potato his father has grown for twenty-three years. His potatoes cost him a little over 38 cents a bushel. He made a net profit of \$38.68. There were several large stumps in this half acre that reduced the yield considerable.

PROFIT PRIZE.

Cornell Cline, sone of Prof. J. S. Cline, Crab Orchard, received second prize for profit. He grew 153 bushels and 42 pounds at a cost

of \$32.75, leaving a net profit of \$43.17, at a cost of a little over 21 cents a bushel. He received \$27. He used White Elephants for seed.

George Brookhart was awarded the prize for having the best samples of potatoes shown at the Farmers' Institute at Nashville and received \$20. He raised 134 bushels and 53 pounds at a cost of \$43.63, and a net profit of \$23.81. His potatoes cost him a trifle over 32 cents a bushel. He used Green Mountain potatoes for seed.

W. D. Brookhart, brother to George Brookhart, and son of C. E. Brookhart, Peavine, received the second prize on the samples taken to the Farmers' Institute and received \$5. He used Green Mountain potatoes for seed.

Taylor Henry, son of J. H. Henry, Isoline, grew 120 bushels and 57 pounds and used Carman potatoes for seed. He made a net profit of \$28.09 and his potatoes cost him a trifle over 23 cents. He was awarded a cash prize of \$5.

Robert E. Wyatt and B. R. Wyatt, Newton, were in the contest, but did not win a prize. Robert, however, failed to make expenses owing to a poor stand and wet ground and the committee awarded him \$5 as an encouragement for future efforts. He raised only 59 bushels and four pounds at a cost of \$33.60, which made his potatoes cost him a trifle over 51 cents, which made him a loser of \$4.07.

B. R. Wyatt raised 83 bushels at a cost of nearly 47 cents a bushel. His ground was wet and had several stumps in his patch. Both of these boys understand where they failed, which is worth much more to them than the crop they raised. They are not discouraged and expect to enter the contest again next year.

Herbert Wilson, son of C. C. Wilson, Watson, did not receive any prize, but raised 111 bushels of potatoes at a cost of \$30.40, which made his potatoes cost him a little over 22 cents. He planted the Carman potato. For some reason he had a poor stand.

Clarence Adams received a cash prize of \$2. He raised 78 bushels of potatoes at a cost of nearly 25 cents a bushel. He planted Burbank seed.

Edgar Adams received no prize, but he raised 75 bushels at a cost of a little over 45 cents a bushel.

Joe Hedgecoth, Crab Orchard, raised 111 bushels at a cost of 21 cents a bushel. He received no cash prize. He planted the Green Mountain potato.

To J. E. Converse more than any other person is due the success of the Boys' Potato Club of this county, for he first advanced the idea and gave much time to it from start to finish and did all possible to assist and encourage the boys. Mr. Converse is here doing experimental work under the direction of the State Experiment Station at Knoxville and during the four or five years he has been here has done all he could to enlighten the farmers as to the best methods of culture and has imparted to all who sought it the useful features of his numerous experiments on this soil.

The Potato Club has demonstrated very clearly that this section can-

not be equalled anywhere in the South for growing potatoes both of high quality and large yield. It has further shown that this section has no crop that pays so well as potatoes when properly handled.

The outlook for getting into the general market with potatoes all over the South depends largely on the crop becoming abundant enough to make carlot shipments easy. The seed potato industry promises to become of vast importance if properly developed.

The prizes were awarded to the boys at the High School building at Crossville Saturday morning at the close of the teachers' meeting.

A committee was appointed to organize another potato club for next year and a committee consisting of ladies was named to organize a Tomato Club among the girls of the county. Those chosen for the Potato Club are: J. E. Converse, W. E. Wheeler, Frank March, M. L. Taylor and I. S. Cline. Those chosen to organize the Tomato Club are: Mary Spencer, Jessie Rose, Elizabeth Burns, Gertrude Needham and Beatrice Sabine.

POTATO CLUB GETTING ATTENTION.

The Progressive Farmer Gives an Interesting Write-up of What the Boys Did.

The following taken from the Progressive Farmer, of Raleigh, N. C., relative to the result of the Cumberland County Boys' Potato Club proves that the work done is attracting very favorable notice and will doubtless result in good for this section. The Progressive Farmer says:

The managing editor of the Progressive Farmer spent a day last week at Nashville, Tenn., where the Middle Tennessee Farmers' Institute was in session.

Despite bad weather there was a splendid crowd of farmers, farmers' wives and farmers' children present. In fact, the crowd was entirely too large for the hall of the House of Representatives, in which the meetings were held. It looks as if Middle Tennessee farmers would soon have to follow the example of their East Tennessee brethren and build a hall especially for these convention meetings. There was something said of doing this when the Knapp Farm Life School shall have been established, and surely there could be no more fitting place for a gathering of enterprising farmers than on the grounds of a college devoted to the training of young people for farm life.

The gathering was large enough, too, to make it desirable to have sectional meetings such as the East Tennessee convention holds. It is a good thing for big bodies like this to assemble as a whole, part of the time, for there is an enthusiasm in such a gathering which is likely to be contagious. There are some some addresses best made to big crowds, but when it comes to the directly practical talks, which must always be the most valuable feature of an institute, the more intimate the relation that can be established between speaker and listeners the better. Indeed, a general experience meeting like that conducted by

Professor Morgan on the second day of the Institute is the sort of meeting that helps farmers most, because there is a chance for each man to find out just what he most wishes to know.

Much attention was devoted to educational matters, to public health and to the interests of the farm women. There was a special Homemakers' Section, and there were also some very pointed talks by farm ladies to the men of the assembly. The children were given their share of attention, too. The Corn Club boys were there, with a fine exhibit, of course. Miss Virginia Moore's Tomato Club girls were a center of interest, as were Mr. Converse's Potato Club boys.

We wish to call attention to the work done by Cumberland County in promoting the growing of potatoes by the boys on the poorest type of soils to be found in the State, those of the Cumberland Plateau. J. E. Converse had fifteen boys who reported, and they made an average yield of 258 bushels at an average cost of \$78, or an average net profit, counting the potatoes at 50 cents a bushel, of \$50 per acre. The highest yield was 384 bushels per acre, made at a cost of 27 cents per bushel. One crop was made for 18 cents a bushel; another cost 54 cents; the average was 30 cents.

These yields show that the claim that "Cumberland County can raise more potatoes than Tennessee imports," is justified. They show, too, that even the poorest soils of the State can be made to produce paying crops when properly handled. They show, again, that when boys set out to farm, they can give the men something to think about.

About \$325 in prizes was awarded these boys, \$75 of this amount being given in scholarships to the short courses at the University of Tennessee. Prizes were given for largest yields, greatest profits, best essays on potatoes, and best selections of one peck each. The boys worked a half acre each.

The work being done by the Crossville Station is certainly of value to Tennessee, for this Cumberland Plateau country is too extensive to be neglected, and it evidently has possibilities undreamed of a few years ago. With the addition of phosphorus and vegetable matter to the soil, this section may yet supply a large portion of the South with potatoes, and in addition, become a great live stock country.

Commenting on the article from the *Progressive Farmer*, the *Crossville Chronicle* says:

There is one feature of the report given by the *Progressive Farmer* that is incorrect and misleading—the statement of classing the soil of the Cumberland Plateau as the "poorest type of soil to be found in the State."

The soil of this plateau is far from being the poorest in the State. Very much of the uplands of the valley section of the State, or what is generally called the "barrens," is not nearly so productive as the soil of this plateau. Neither is it so easily worked, nor does it respond so promptly to the application of fertilizers.

It is very natural for the *Progressive Farmer* to fall into the error that it did, for the sentiment it expressed is the general view taken of this plateau section, and only of late years has it been demonstrated to the contrary, for the simple reason that our people have not realized

the possibilities of this soil and have devoted most of their energies to raising cattle on the free range. It was necessary to have feed for winter, but our people confined their efforts largely to growing millet and redtop along with corn fodder. Of recent years our farmers have been growing peas and clover to a very much larger extent than ever before. They find they can grow just as many tons of clover to the acre as the valley farmer, and at far less cost, for the land they grow it on costs them from ten to twenty-five dollars, while the valley farmer grows his clover on land that sells readily for \$50 to \$100.

That this section should and will become the main source of potato supply for the South is without question, and would leap promptly to that position, so far as our ability to produce the needed quantity goes, if the South generally realized the excellence of the potatoes grown here and the splendid quality of seed potatoes we produce. But these facts will become known in time and then this section will come into its own and will be recognized for what it actually is—the best section of the State, all things considered.

TENNESSEE'S AGRICULTURAL PROGRESS ATTRACTING ATTENTION.

The last issue of the Manufacturers' Record publishes Col. Robert Gates' paper, read before the Middle Tennessee Farmers' Institute week before last, almost in its entirety, and it is well deserving of the attention of such a journal.

Colonel Gates' subject was "Farmers and Railroads," and from the position he has held for a number of years of industrial agent of the Louisville & Nashville Railroad, he is well equipped to discuss the subject.

Mr. Gates made a strong plea for the continuance of the amicable relations which now exist between railroads of the State and its rural population and spoke eloquently of the mutual tie of interest which must always exist between the producer and the carrier of his produce, who must inevitably and unavoidably depend upon each other for their prosperity.

He seemed to touch a sympathetic chord from the cordial resolution of thanks that was passed and his friends here in his home city feel much gratified by the impression his fine paper produced.

The notice of the Farmers' Institute was also very complimentary to the progressive spirit alive in our state, as the following brief extract shows:

If any one in this country had thought that Tennessee farmers were not prosperous or were not following lines of progressive agronomy, he would have changed his mind instantly had he attended the Middle Tennessee Farmers' Institute.

Diversified farming, scientific agriculture, rotation of crops, subsoiling, the balanced ration, seed selection and propagation, what is plant food, what legume yields most nitrogen, the proper distribution of phosphorics and what proportion of results from the first, second or third year of distribution; what content of potash in Tennessee soil, and a score of other things vital to business farming made the burden of the discussion.

What better boost can Tennessee have to induce a good class of immigrants than giving publicity to what is actually being done to develop her agricultural resources that are so varied that one can choose their own line of farming or fruit growing with even chance of success?

The Manufacturers' Record has a world-wide circulation and its readers belong to a class who are seeking information with the ulterior object of putting it to practical use.

The West Tennessee Farmers' Institute was equally as fine a demonstration of the strides that Tennessee is making in the way of internal development and improvement and no inland county in the State has better railroad facilities to aid and encourage farming, stock raising and fruit growing than Madison, and we have a right to hope and expect that our county will forge well to the front by the time the West Tennessee Farmers' Institute meets in Jackson in 1913.
—*Jackson (Tenn.) Sun.*

STATE BOYS' CORN CLUB ORGANIZED.

On December 4, 1912, Commissioner Peck requested Mr. J. R. Fewell, Assistant State Agent in Charge of Boys' Corn Club Work in Tennessee, to organize the boys attending the Middle Tennessee Farmers' Institute into a definite organization. Upon this request the boys were assembled in the House of Representatives and Mr. Fewell spoke to them briefly, explaining the object of the meeting and suggested that the boys from different counties get together and elect a committeeman from their respective counties to draw up rules and regulations for the organization. Mr. Tomlinson, of the State Department of Agriculture, called the name of the counties and the boy elected from the county named arose and took his place with other committeemen. After this election the committee retired to the Senate Chamber and proceeded to the preparation and adoption of a constitution and by-laws.

Herbert McKibben, of Culleoka,, the boy from Maury County, who made 150 bushels and 20 pounds, the largest yield reported at that time, was elected temporary chairman of the committee.

The following is the constitution as it was finally adopted:

CONSTITUTION.

I.

This club shall be known as the Boys' Corn Club Department of the Middle Tennessee Farmers' Institute.

II.

The object of this club is for its members to become scientific and practical farmers and for the boys of Middle Tennessee to become a unit so that they may know each other at the Institute and have unified plans for self-development and pleasure.

III.

The membership of this club shall be restricted to the boys who are members in good standing of clubs in their respective counties. This is adopted with the understanding that any boy can become a member of his county club, in counties where no such clubs exist, by sending his name to the State Corn Club Agent and by following the Government's instructions for Corn Club boys.

IV.

There shall be a president, vice-president, secretary, treasurer, five members of an advisory committee and a second vice-president from each county, who is also the president of the county club.

V.

It shall be the duty of each member to be a member in good standing of his county club and fulfill his duties as such by conducting himself in a manly manner, by assisting the Superintendent in organizing his local school district and by giving a full and accurate account of his work as requested by the Boys' Corn Club Department of the United States Government.

VI.

It shall be the duty of the President to preside over all meetings and confer with the Secretary and Advisory Committee relative to all matters of interest to the club. The Vice-President shall act in the absence of the President. The Secretary-Treasurer shall keep accurate accounts of all meetings and other records of the club, shall handle the funds of the club and confer with the President and Advisory Committee relative to all matters of importance to the club. The Advisory Committee shall arrange for all public contests and exhibits, the procuring and awarding of prizes, the sending of literature and circulars of information and the reporting of statistics and other official information.

VII.

The county club shall be considered as a subsidiary club of this club.

After the adoption of the foregoing by the entire committee, the following officers were elected:

President, Roy Parks.

Vice-President, Jennings Kelly.

Secretary-Treasurer, William Woods.

Advisory Committee, Capt. T. F. Peck, Supt. J. W. Brister, Mr. J. R. Fewell, Mr. J. M. Dean, and Supt. Austin Smith, of Winchester.

By this time all the members had assembled in the Senate Chamber, and after the foregoing was read to them, with the recommendation of the committee, the entire proceeding was adopted unanimously.

Those assisting the boys in this organization were Prof. Jacobs, of Murfreesboro; Prof. Verd Peterson, of Murfreesboro; Prof. Austin Smith, of Winchester; Prof. M. L. Hardin, of Camden; Prof. B. H. Gaultney, of Pulaski; Mr. Dean, of Columbia; Mr. Fewell, and others not recorded by the Secretary.

A few final words of encouragement were given by Messrs. Smith, Dean and Fewell. Then a motion to adjourn was made and carried unanimously.

TO MAKE MONEY ON THE FARM.

A shrewd business man bought a farm as a hobby, and started out to apply business principles to farming. Among other stock, he bought fourteen cows. These he named and weighed. He also weighed the food he gave to each, and the milk each cow produced. After a test of several weeks he found that he had but one really productive cow in the fourteen. The other cows, as judged by the adopted standard, were not worth their feed. So he sold them and bought others, determined to find fourteen productive cows. Gradually he eliminated the unprofitable cows from each new herd. When he had bought one hundred and ten cows he found the fourteenth productive cow. He applied scientific principles to the production of milk. He is now making more real profit from his fourteen cows than he would have made from all the balance of the one hundred and ten.—*Suburban Life Magazine for November.*

There is danger of some horses eating too much hay. No horse should be allowed to gorge itself. Feed the first thing in the morning just enough hay to be cleaned up in one hour. In the evening feed about twice that amount. A horse at work should have plenty of good clean grain three times a day.

PROCEEDINGS OF THE MIDDLE TENNESSEE HOME-MAKERS' ASSOCIATION.DECEMBER 3, 4, 5, 1912.

FIRST DAY, TUESDAY, DECEMBER 3, 1912.

The second annual session of the Tennessee Home-Makers' Association opened on Tuesday, December 3, at 2 o'clock p.m., in the assembly room of the Hermitage Hotel, with Mrs. J. Taylor Stratton, the President, presiding. About one hundred and fifty women were present.

The meeting was called to order by the President, after which prayer was offered by Dr. James I. Vance, pastor of the First Presbyterian Church of Nashville.

PRESIDENT'S ADDRESS.

Mrs. Stratton, the President, then gave the opening address, which follows:

As President of the Home-making section of the Middle Tennessee Farmers' Institute, I have the pleasure of bidding you welcome. Capt. Peck, the Commissioner of Agriculture, realizing how much good the annual State Farmers' Institute had done for the men, thought the women of Middle Tennessee might find help in a similar organization. As a result our Home-makers Association was formed last December.

The object is to get in touch with the woman on the farm, and by the aid of community meetings help the country family to enjoy the blessings in store for them. We want to establish a new idea of country life that will hold our boys and girls securely in the safety of the farm community.

Much has been done to lighten the burden of the city woman, but the farmer's wife has toiled hopelessly along in the same way for generations. Improved machinery has come to the barn and field, but some of the women on the farm have gone without the simplest labor-saving devices; but the day is dawning for the country housewife. Through her club she, too, will know of the many new devices provided for her convenience and comfort. She will learn of the more economical way of using time and the value of education in all things.

The farm woman who has heretofore been practically an unknown quantity in the life equation of this country is now following closely on the heels of her husband, who is coming into his inherent rights. The moral stamina and the financial power of the farmer is largely influenced by the farm home and the farm home and children are largely what the mother makes them.

Public opinion agrees with me, for the question, "Who is the greatest woman?" was given not long ago to two hundred school teachers, and the one who got the prize gave the following answer: "The greatest woman is the wife of a farmer of moderate means, who does her own cooking, washing and ironing, sewing and bringing up a family of boys and girls to be useful members of society, and finding time for intellectual improvement."

Science is a goddess enthroned by reason, and nowhere is her reign more needed than in the kitchen. Our schools are teaching our daughters the science of housekeeping and home-making, and preparing them to make better homes in the future. The day is passing when a man can make a successful farm citizen without an intelligent woman as a partner. Once upon a time any man could farm; today only smart men can afford to live on a farm, for men are being educated for their profession of farm work.

Why not teach the women to be good farm women, to make good homes, to feed and care for their families, thus uplifting them physically and morally? I know that the question of cooking, spending and child training are too practical, too commonplace for a lover to ask of his sweetheart, but when the glare has worn off the bread is soggy, the expenses overrun the income and the house is unkept, it is then that love often flies out the window, and it is one reason why our courts are so full of divorce cases.

The desire for organization and improvement is widespread among farm women, for a notice of the work started in Tennessee written for one farm paper brought letters of inquiry from thirteen states and Canada. To give you another instance, a woman out in Missouri wrote begging me to teach her how to make bread. Her mother in East Tennessee had seen our bread in the domestic science car of the Agricultural Train, and had written her about it. I could tell of others.

We have during the year printed circular letters in more than seventy of the country newspapers of Middle Tennessee. We have had printed and mailed over two hundred hand-books and seventy-five letters. All of this was done without State aid. Gentlemen, we ask your help and cooperation in this great work which we have started. It is our desire during the coming year to organize at least one branch in every county in Middle Tennessee.

We need to employ competent women who can go into these sections and help and encourage these country women. We need and must have an appropriation by the next Legislature to help carry on this work for the farm women. We have similar organizations in other parts of the State, and I am sure this work will knit a closer tie between country and city, between the East, Middle and West sections until each will appreciate the other, and all join in increasing the fame of Tennessee's fair women.

Mrs. A. B. Cooke, President of the State Federation of Women's

Clubs, made the following address:

COOPERATION BETWEEN CITY AND COUNTRY WOMEN.



Many people mistakenly think that women's clubs are endeavoring to take women away from their homes, never realizing that with many the home improvement work is the most notable feature. Especially important is this branch of the work of the Tennessee Federation of Women's Clubs. This was well brought out in the following address delivered in Nashville, December 3, before the Home-makers' section of the Middle Tennessee Farmers' Institute, on "Cooperation Between the City Woman and the Country Woman in the Federation of Women's Clubs," by Mrs. A. B. Cooke, the capable President of the

Tennessee Federation. Mrs. Cooke's address was one of the star features of the institute, and it was as follows:

It seems fitting that I should speak to this gathering on the federation work for two reasons—first, because the Federation has just one aim—the betterment of conditions surrounding women and children; and as I have listened to the other talks this afternoon I see that is also the aim of the Home-makers' Club. Then, too, there is a close connection between the State Federation and the Home-makers, in that the Woman's Board of the State Fair is a federated club, and I know it is largely instrumental in the organization of the Home-makers.

Before I talk to you about cooperation in the Federation, however, let me tell you something of what the Federation is. Time was—and not so very long ago—when there was no Federation of Women's Clubs, only a few isolated clubs. The 5,000 club women in Tennessee and the 800,000 in the United States had not found themselves—had not realized the great power there is in organization to bring about a change in public opinion and conditions for the common good. Then the time came. It seemed as if it came suddenly, when they saw unfavorable conditions around them and awoke to the necessity of doing something.

There is a little story going the rounds of the press which is a good illustration here. It is told that the little foreign children in the Hull House neighborhood, having engaged a number of times in theatricals in the Hull House Auditorium, decided to write a play for themselves and give it for the benefit of their elders. They had been told stories of the Revolution, and so choose that for their subject, working out the story from their own point of view.

"Ain't it fierce?" said one child actor to another. "Aint it fierce that we ain't got no flag for this here revolution?"

"Ain't it fierce?" said one child actor. "Ain't it fierce?"

(Enter George Washington, talking with Betsy Ross, George with a worried look on his brow).

"Yes, it is fierce," says Betsy; "here, George, hold the baby till I go make one."

Unconsciously these children struck the keynote of feminine nature. Women always rise to an emergency. They may not always meet it wisely, but the very endeavor means growth and better success next time. This very readiness of women to meet an emergency is the real explanation of the modern club movement. Strange as it may seem, the Federation of Women's Clubs is the direct outcome of the establishment, less than twenty-five years ago, of factories all over the country which have taken, one by one, nearly all the old-time employments out of the home—spinning, weaving, brewing, baking, canning, preserving, millinery, dressmaking, and even plain sewing.

I hear you say, "I do canning and preserving and baking in my home, and some of the sewing."

Yes, so do I in my home. Still, the fact that these great factories, bakeries, canneries and shops piled high with ready-made clothing of all kinds—the fact that these do exist and prosper—is proof positive that for the majority of women these things have been taken out of the home. And because of this fact women have become divided into two great sections, or classes—those who are fortunate enough to be able to stay in the home, and those who, because of economic conditions, have been forced to leave their homes and children and follow these industries into the factories.

The women of the former class, with the leisure made by the elimination of these industries from the home, with the children in school two-thirds of the day, or grown up and interested in their own pursuits, these women began to look about them with their eyes open and they saw things they had not seen before. They saw that the men were so busy in the shops and the factories doing the things that had formerly been done in the home by the women, that some of the things the men used to do were being sadly neglected.

They saw that the old-fashioned town meeting that once was held in every town and hamlet to discuss the welfare of the community had either been forgotten or abolished. They saw that the streets were dirty and their new knowledge of germ-life told them they were a menace to health. They saw that the time had passed when every family kept its own cow and that impure milk was being sold from unclean and uninspected dairies and was killing the babies by thousands. They saw that impure water and impure food from unclean canneries and groceries was working similar havoc with adults.

They saw that thoughtlessness or greed was working the young children of the poor in factories and mines, and that bad sanitary conditions and long working hours were injuring the health of the women in the factories and thus undermining the future vigor of the race.

And the women of the leisure class, whose men had so graciously given them this leisure, said to each other, "Here is an emergency we must meet." They had, many of them, their Browning and their Shakespeare and their Dante clubs, which they attended for their own profit and pleasure. They decided to band these clubs into a state organization which they called a Federation, and to tie these State federations together into a general federation.

They established interests in their clubs aside from the regular work which formed departments in the Federation, and over each department they placed a chairman and committee from the federated clubs, and they said, "Now we are ready to cooperate, the city club with the club of country women, and the country club with the city women. We have departments of art, civics, civil service reform, conservation, education, domestic science, industrial and social conditions, literature, legislation, music and public health. Surely we shall be able to do something towards alleviating conditions."

Accordingly, in our Tennessee Federation, the Chairman of Art is anxious to have the club women throughout the state encourage the establishment of the old-time village industries or handicrafts; to have them urge the bringing out of the old-time looms from attic or barn or the buying of new and less cumbersome ones for the weaving of the beautiful, soft-colored rag rugs and carpets, which have not only an artistic value but a commercial value as well. This chairman is urging the revival of the lovely, old-time cross-stitch embroidery and the weaving of baskets from the grasses which grow on hillside and meadow, and which may be dried and used so beautifully.

In return she is offering to establish a circuit for a traveling gallery of pictures of prominent Chicago artists, which may be had for exhibition purposes by clubs coming in on that circuit for the express charges and a trifling fee to cover expenses. In this way club women in remote districts can give their community the benefit of pictures that are exhibited in large cities. The State chairman is able to secure this gallery through the general Federation, which sends these out to all the States that wish them. This chairman also has some excellent plans for art in the schools which she hopes to be able to carry out.

The Chairman of Civics sends out instructions for the establishment of junior civic leagues among the children, and urges the establishment of playgrounds for them both in the city and in the country. She urges the club women to have "clean-up" days, both spring and fall, in their communities, and to send her photographs of before and after that she may use them in her lectures on state-wide conditions and improvements.

The Chairman of Civil Service Reforms asks the club women to visit the institutions where the State takes care of her poor and sick with the purpose of ascertaining whether those in charge are the expert, trained assistants they should be.

The Chairman of Conservation, through literature and newspaper publicity, is endeavoring to arouse a sentiment against the destruction

of the forests we have left and the ruthless killing of our song and game birds.

The Chairman of Domestic Science urges the clubs to establish a department of domestic science in the department clubs, and that the other clubs give at least one program to the study of home problems, offering to provide a program for such a meeting. She also offers to arrange for a cooking demonstrator to go to these clubs for a day's or a week's demonstration of plain and fancy cooking, giving a good working plan to the clubs by which they may be able to stand the expense.

The Chairman of Education asks the club women to investigate conditions in the schools nearest to them, suggesting to them to observe the ventilation, the conditions of the floors and desks, the surroundings of the house, toilet facilities, and general physical condition of the children. She is also asking those in the rural districts to agitate for the establishment, by the county, of night schools for adults, at least in the good weather, that those who need it may learn to read and write and thus lower the rate of illiteracy in our State.

The Chairman of Industrial and Social Conditions and her committee is carrying on the campaign in Nashville and throughout the State for early Christmas shopping that the Christmas season may be other than a nightmare to the women who toil. She has also some plans for the factory children for which she will ask co-operation after the shopping campaign is over.

The Chairman of Legislation asks all women in the federation and all women in the State to co-operate in the effort to remove the disabilities of married women in Tennessee—that a married woman shall have the same right to control her own property as she had before she was married. She also asks that the vital statistics bill and the common drinking cup bill be supported.

I hear you ask how can women help the Legislative Committee without going to the capitol. I answer—by informing themselves thoroughly on these bills and then talking intelligently to the men of their families, most of whom are too busy to pay any attention to these matters; also to talk to the legislators of their district and to see that the men of the family do likewise.

The Chairman of Literature stands ready to furnish programmes for literary study to any club for the asking, and to assist in sending traveling libraries throughout the country districts—these libraries to be furnished by the State.

The Chairman of Music has prepared programmes for the use of music clubs and for those clubs who wish to be informed on musical lines for its cultural value.

The Chairman of Public Health, with her able committee, is working in the fight against the great white plague and against the black plague; is urging the club women to investigate the sanitary condition of the schools, and to further in every way possible the efforts of our State Pure Food Inspector to bring about better enforcement of our excellent pure food laws.

By means of investigation, agitation and the distribution of literature on these different subjects the club women in both State and general federations have done much in the last ten years to bring about that change in public opinion that has resulted in the great wave of reform that is sweeping over the country. As they grow better trained and also add to their numbers they will be able to do more.

I invite you, home-makers of Tennessee, to become part of this body, and if I should be so fortunate as to be invited to speak to you next year I hope you will be able to repeat with me our federation pledge—

“We pledge ourselves to use our united strength to make better homes, better schools, better surroundings, better scholarship and better lives; to work together for civic health and civic righteousness; to preserve our heritage, the forests and the natural beauties of the land; to procure for our children an education that fits them for life, the training of the heart and the hand as well as the head; to protect the children, not our own, who are deprived of the privilege of natural childhood; to obtain right conditions and proper safeguards for the women who toil.”

Mrs. Dott Boggess Polk, of Lawrence County, was introduced, and read the following paper:

THE BENEFITS OF A COLLEGE EDUCATION FOR FARMERS' DAUGHTERS.

Henry Drummond has very wisely said that “There is no happiness in being or in getting, but only in giving and in serving others.” And cannot the real purpose of a college education be to prepare us to be better able to serve and help one another?

The truly fortunate individual is not the one who succeeds in life, but the one who succeeds *in living*. The prime object of colleges is character-building—helping to lay the foundation for a stronger and nobler character. The aim is not simply to make intellectual giants, but to make men and women mentally, physically and morally stronger.

But we so often hear the cry, “Why give our girls, and especially our farm girls, a college course?” They will soon marry and probably settle down on some little farm, and the money and time spent in educating them might as well have been thrown away.

But is our education all for naught simply because we do marry and perhaps settle down on some little farm? No—a thousand times no.

If there is one class of people on earth who need education, and that the very best, it certainly is the mothers of the land, and especially our farm mothers, because from our country districts come our boys and girls who are today, and will be tomorrow, the backbone of our nation. Is it not a reasonable conjecture that a mother whose intellect has been developed is better able to inspire noble ambitions

and high aspirations within her children than one whose mind and faculties were dwarfed because of lack of educational advantages?

It is the mother who needs to be able to read human nature. She has many phases of life to confront her in the rearing of her children. It has been wisely said that "The inspiration of the mother determines the aspiration of the child."

It is the mother's task to make her children reverent, faithful, dutiful; to instill into their lives respect for justice, law and order, and how can she better do this than by keeping before them the great names of history, recounting the lives of the immortal host who have rendered illustrious art and industry, trade, science and government?

And if a man needs the best of educational advantages to prepare himself for life and its work, how much more does a woman need it to prepare her for the greatest, the grandest, the most difficult work in the world—that which calls into play her every faculty—the rearing and moulding of the lives of our boys and girls who will be the men and women of tomorrow. And what they become tomorrow depends on what the mother makes them today. By being a literary woman she knows just what kind of literature should be allowed in the home. She is able to sit down with her children and aid them in the solving of their mathematical and language problems—in short, the mother is living over again her school days, and thereby adding years to her life by feeling young again with her children.

Too often the college career is judged from a financial standpoint. If by accident the child who was never within a college makes a greater success financially than the one who spent time and money in college, then the scornful finger is pointed at the college graduate. But what might have been the possibilities of that one who succeeded so well without training if he had had a few years of college training?

Years ago, when a man was not capable of doing anything else, he became a farmer. But times have changed; we are living in a progressive age—progressive in the line of farming and housekeeping as well as along other lines.

Today it is a recognized fact that the would-be successful farmer needs an education. So it is becoming more and more a settled truth that our boys must be educated for successful farming. They must understand plant life and chemistry in judging their soils, etc.

These boys may some day be choosing some of our farm girls for helpmates, and are we going to prepare these girls to be true helpmates, not simply women who can wash and cook? Let us give to our farm girls such development that they can be congenial and equal to their husbands in every respect; capable of conversing intelligently upon any topic with the men; competent to grasp, in the reading of the farm papers, magazines and bulletins, the salient points, and able to tell it to the men of the household in an interesting way. Then will the husbands and sons find the mothers and daughters just as entertaining and instructive company as they can find outside the home roof. The idea that because our farmers' daughters live on the farm

they do not need a university course equal to anyone else is wrong. College graduates are needed in every community. Right in my own section—and I suspect mine is not alone—the Sunday school, W. C. T. U. and other religious organizations suffer because of lack of efficient leaders. Let our country girls feel that they are needed with their college training right at home in the country districts, taking the leadership of the temperance and missionary work, helping to uplift humanity and thereby strengthening themselves.

College training gives a girl a higher standard of life—gives her real culture, and not just outside polish. Her mind has no room for the shallow, frivolous things of life, but she will seek those things that are worth while—those things that help to make life brighter and better for her associates.

Then it is that the work at the old farm home will not be considered drudgery, but will be enjoyed as healthful exercise amidst her literary work and other arts. When our farm girls are given good educational advantages we will not find them thronging to the city with its allurements, working in shops, factories and stores, injuring their health, barely clothing and boarding themselves, but with their literary work, music, etc., at home intermingled with their poultry, tomato clubs and other domestic arts, they will be the healthiest, happiest, most care-free girls on earth. Then our Y. W. C. A., the W. C. T. U. and other organizations will not suffer for lack of trained leaders.

Give us girl graduates in our rural districts and I venture to assert that the homes will be more sanitary, more economical, the communities more wide-awake on all progressive subjects, our religious, temperance and educational organizations taking on new life, and, in short, the world being the greater blessed because of educated womanhood.

Mrs. Charles O. Browder, of Sweetwater, gave an original dialect number, "The Woman on the Farm," which was published in a recent number of *Tennessee Agriculture*."

Mrs. J. C. Bradford, President of the Nashville Art Association, was then heard in an address, "The Decoration of the Home."

SECOND DAY, DECEMBER 4, 1912.

The Association was called to order at 1:15 p.m. by Mrs. Stratton, the President.

The Secretary, Mrs. Tandy, gave a talk on the Handbook of the Association.

Mrs. T. G. Settle, of Nashville, gave a paper, "The Care of Children in the Home." Mrs. Settle's address follows:

THE CARE OF CHILDREN IN THE HOME.



It is not of bodily care alone that I wish to speak to you this afternoon, though that will constitute a large part of my subject. In fact, we women can hardly deal with a strictly bodily care of little children, for no woman whose heart holds the genuine mother love can care for the little bodies of children without the tender feeling of protection all women have for little children. So my subject embraces the all-care of children in the home, the mental, moral and spiritual care, with the accompanying care of the body.

Any woman is the universal mother, whether she be the helping hand to the house of little ones or the sturdily independent bachelor maid.

The mother instinct to protect and cherish is the basic principle of human living, and the every home for the talent of loving is wisely and unselfishly expended, is a city cell whose guarded walls resist the folds to happiness. The child of a wise mother is thrice armed for the life's battle. The helmet of prudence, the shield of chastity, the sword of courage, are the fighting equipment of one who learns at his mother's knee the virtue of loving service.

The training of a little child begins with its first cries, for the tiniest atom of humanity soon learns the effect on barometric conditions of a squall. I am not advocating severe training with that bundle of sweetness—the baby—but tired mothers might save themselves much trouble by putting even the baby to bed at a set time, bathing at another, airing at another, for the baby is a little human clock. You can set the hands to your liking.

This also applies to older children. The irritating effect of a haphazard style of living for children is evident. A child's nerves get tense. His little round of living uses its boundaries when he is thrust from one occupation to another.

The formation of good habits in childhood furnishes a life foundation that cannot be undermined. Neatness, kindness, politeness, are all easily instilled into a child's character. The child whose body and clothing is kept clean and who is taught how to keep clean, is not apt to be an untidy adult. By clean, I do not mean always fresh clothing and constant scrubbing of tender places—not at all. A certain amount of dirt is good for children. They suffer for lack of it, but there is no reason in giving a child entire freedom if that freedom means delv-

ing in bacteria laden dust, or handling germ laden objects, such as stones and sticks picked up on the streets, bits of paper, any of the hundred things a child is tempted to grasp.

Country mothers who have the wide, clean fields for their children's play can hardly appreciate the worry experienced by city mothers, who have no fences to shut in their children for protection from traffic and other dangers. I am heartily opposed to the no fence law for the sake of city mothers who do not want or cannot afford nurses. I am opposed to doing away with that excellent safeguard—the fence. It is a nurse in itself. Think of turning little children out in the streets to play. Any constant reader of daily papers knows the fearful toll we pay for the slight benefit conferred upon the eye. One's home is one's castle. Why not a castle hall?

Back to the question of cleanliness. A close observance of several years has many times made me wonder that the anti-expectoration laws were not pushed to a complete enforcement by mothers. Who of us has not witnessed in railway stations, street cars, public conveyances and places of all kinds, tiny tots too tired to stand sitting on germ laden floors or leaning on filth covered window sills. Watch the children when they are abroad. Don't let them lean on the window sills when they are in cars or trains. Teach them to wash their hands. Keep water, soap and towel where even the two-year-old can have the fun and profit of making a good lather. Soon they will demand clean hands.

The habit of putting little children to play on the floor is bad. Let the baby's play place be the bed, safely hedged in by chairs. Or better still, a big dry goods box with sides and bottom padded. Here he can have his fun without worry on the mother's part. Even in the best heated houses the floors are more or less draughty playground.

Let the older children have chairs and tables especially built for little bodies and assign a special place for these when not in use. Give them little desks or table drawers all for their own in which to keep the treasure trove of pictures, strings, pencils, and small toys dear to childish hearts. Expect them to be methodical, and suggest every little while or so a general straightening of small plunder. Let them straighten for you, tired mother; let the willing little hands arrange the brushes on the dressing case and wipe the dishes for you.

Be patient over the beds they make and encourage them always to greater efforts, for no normal child is a sluggard. The true instinct of childhood is to help in the work going on about it, and you are sowing a harvest for the future of tares of unselfishness when you refuse the aid the tiny hands long to give.

Let each child realize that some space in the house is its own in which to play. A place not to be encroached upon always sweet to my memory will be the picture of two little figures busily working away, each in its own small corner, with the ironing board between for a boundary line.

We can't all have such nurseries as are featured, with low cushioned seats, delightful window seats for toys in the house beautiful. In

fact, often there is no nursery at all, but if it's only a kitchen corner that can be spared to the tiny dinner table, the little washtub, and the Noah's ark, let the child know it is for his use alone.

The successful mother is a child with the children, learning at first hand the language of child to child. Many fathers and mothers never learn this accomplishment, and wonder why their children grow diffident and difficult of management, failing to realize that it is oftentimes our austerity which cuts our children away from us. We must become as little children to understand the thoughts and fancies of childhood.

There was one household in which the children used to greet their playmates at the door with a finger on their lips and a whispered caution: "Hush! Father's at home!" How different was the nearby home where father's coming meant a time of merriment and joy, where his chair was a pivot around which the evening's play revolved. The wide, wooden arms of that chair held the paper where father drew wonderful birds, the book out of which he read, and were a seat for little forms that loved to sit with father, held by his strong, warm arm, watching the dancing flames in winter and the stars in summer, hearing the mysteries of worlds afar, and turning at last from distant things to the near, well-loved figure.

That chair still sits in memory before each evening's fire in the household of most children. It's owner is just as present today as then. He sang and rocked the babies thirty years ago.

A mother's love! If a father's love is far-reaching in its influence, how much wider in scope is the mother's? Wonderful plan of life that puts into a woman's hand the uncharted life course of her child. The wee atom of babyhood she rocks is her blessing or curse to the future. How can she spare it then the love and care that alone can guide the small feet aright? Sleepless nights, days of toil, hours of dread, are a part of every mother's portion, but the happiness of love returned is hers, and the utmost joy of creation.

Children need a great deal of love. Just as the old hen hovers her chicks beneath her soft wings, so little children need a tender, protecting love. Without it they droop and fade. What mother, whose heart has not beat faster to know her home coming is eagerly watched by little children, who may enjoy for the time the company of others, yet who turn as little flowers to the sunshine of mother's love. One dear little boy of four often says to his mother, "I wish I had growed up before papa so I could have married you."

Mothers, never be too tired to encourage anything the children want to do for you. Take all the little bits of sewing and writing with heartfelt thanks. Material riches are nothing beside the mother's collection of baby gifts. A tiny mat with crooked stitches is more precious than the rarest gem.

As a concluding word let me say it is a wise home-maker who keeps her chicks gathered close around her, and manages to put through the duties of housekeeper and house-mother at the same time.

Without doubt if the children go to a neighbor's house to play it gives the mother more leisure time. Certainly it makes for quiet and cleanliness to let the little folks play be elsewhere than at home, but which is better, a littered house and yard and the mother's loving restraint guarding the children, or spotless rooms and the children always absent from home? The child whose friends meet a welcome at his home is seldom the disobedient child. The fact that his plans and wishes are considered along with those of the grownups of the family, instils in his mind a feeling of freedom in home surroundings, calculated to make for love of home and future solidity of character.

The feeling of freedom is necessary to the growth and happiness of both adults and children. No one can be continually repressed and happy. If mature minds expand in an environment of liberty of thought and action, how open must the child's mind be to the right home atmosphere, which is always one of contentment and freedom.

So better the muddled floors and toy-strewn rooms than the quiet, orderly house, and the children finding their companions and confidants among outsiders, becoming less and less open to the mother's influence, and caring less for home and home people all the while.

A general discussion concerning children followed.

Miss Gertrude White, of Cookeville, spoke on the proper management of the dairy.

HOW I RAISED MY TOMATOES.

Miss Vesta Dawes, of Lawrence County, spoke on "How I Raised My Tomatoes."

I joined the canning and poultry club and received instructions and seeds from the Department of Agriculture. I followed instructions as near as possible.

Early in the spring I made my hotbed and planted my seeds. I covered it with boards at night while it was cold. On account of the rain in the spring it was impossible to get my one-tenth of an acre prepared until the first of June. I had it ploughed and harrowed, and set out part of my plants the same afternoon. I fixed the hills four feet apart, each with a shovel of rich dirt from near the barn, and about a teaspoonful of commercial fertilizer.

My plants were quite large when I set them out, and grew very rapidly, and I hoed and pruned them each week. I staked them with edgings from a saw mill, and tied the plants to them with binding twine. About the first of August they began to ripen, and the canning began. I gathered forty bushels from my patch. I did all of my work except the ploughing.

I won a prize at the State Fair for the best ten ripe tomatoes, and

received a pen of thoroughbred White Wyandotte chickens, of which I am very proud.

Miss Christine Vaughan, of Coffee County, gave an address, which follows:

Miss Moore came to my home on Monday. We did not do much that evening. Next morning early we started to work.

First we gathered our tomatoes, then washed them clean, putting them in blanching trays from two to five minutes. We then peeled and pared the tomatoes and put them in the cans. The cans should be packed tight. We left out a few soft, ripe ones. We put these in a clean white cloth and squeezed out the juice. Never put water on the tomatoes. Our motto is to make the best better. People are tired of buying one tomato in a can of juice. Next we capped and sealed, then exhausted for five minutes (this is not necessary), then tipped the cans. Then we processed from twenty-five to forty-five minutes, according to the ripeness of the tomatoes, and then we put the cans in cold water, and when they were cold we labeled them.

Both Miss Dawes and Miss Vaughan are members of the Girls' Tomato Clubs.

A discussion followed, and Miss Virginia Pearl Moore, who has charge of the tomato canning work, spoke concerning the clubs.

SCHOOL LUNCHES.

Miss Della Stroud spoke on "School Lunches." Her address follows:

School lunches are often prepared with too little care. The many duties of the early morning and the hurry to get off to school, causes a lunch of a few warm biscuits, with meat and preserves, wrapped in a newspaper. This is very injurious, as the warm food will absorb the poisonous ink from the paper. If you prefer using paper, save that found in cracker boxes or buy the paper napkins. Old table cloths, after they are too worn for table use, may be cut into napkins and will wear quite a while in the lunch basket.

Leftovers in meat, such as roast, lamb or beef, chicken or ham, may be cut fine and seasoned with a dressing or made into croquettes, which will be very palatable in a lunch. Cream cheese, which is easily made, not only adds to the lunch but is a valuable food. The cheese may be mixed with nuts, vegetables or fruit. Egg sandwiches may also be found to be very appetizing and nourishing.

A small glass is very convenient to use for a fruit salad or stewed fruit of any kind. Fruit in some form should be used in the lunch if possible, also a bit of cake or some variety of cookies.

The school lunch should be made appetizing and nourishing, as children often eat very little breakfast, and are gone till three and four o'clock in the afternoon.

THIRD DAY, DECEMBER 5, 1912.

The third session of the Home-Makers' Association was called to order by the President at 1:30.

The President appointed Committees on Resolutions and Nominations.

Dr. H. H. Shoulders, Assistant Secretary of the State Board of Health, read a paper on "Sanitation and Hygiene in the Home," which follows:

SANITATION AND HYGIENE IN THE HOME.



Inasmuch as it is true that all our efforts along sociologic lines, or along any other line, must evidently affect the home if they be destined to do a real service to the community or state, it becomes particularly fitting that we should occasionally deal in a more specific way with the home and its problems. And in discussing home problems, one could not properly fail to mention that individual so intimately connected with home, whose most vital interest is home-making—the house-wife or mother.

Homes (rural homes in particular) are furnishing our state its great men and women who do great deeds in assisting in the work of placing our civilization upon a higher plane. Too, homes are furnishing the state with its shiftless vagabonds, who prove to be a great menace to both the state and home.

Homes are furnishing the community and state its strong men and women, who possess a healthy mind, a healthy body and an enduring strength. Too, homes are furnishing the community and state with its unfortunates, who are crushed beneath life's burdens, however light they may be—who fill our almshouses to overflowing. In other words, what our homes are our communities are, our civilization is, and will be. Effort spent in making each home better in every respect is effort the fruits of which will live to bless humanity long after the one whose energy was thus spent has been at rest.

Again, I say that inasmuch as both the good and the bad in every respect emanate from home, it is important that every helpful influence possible be focused upon the home; and, inasmuch as the house-wife is usually the superintendent of home, it is not only proper but important that she avail herself of all the knowledge possible which might assist in bettering home conditions.

I might say here that too strong words of commendation could

not be said of your association. I know of no organization the aims and purpose of which are more pertinent to the needs of our state than are yours.

All the problems of home sanitation could not be even briefly mentioned in the short time allotted me on this program, nor could I mention them all had I the time. I, therefore, shall consider but a few of them with which I am most acquainted.

What I shall say has particular reference to the rural home, because I have presumed that, inasmuch as yours is an allied organization to the Farmers' Institute, you are considering the needs of the country home in particular. And when I speak of the country home, I mean for that term to include both the house and the premises, because they are inseparable.

I shall take up a few of the features of the country home and attempt to determine their relationship.

A very important division of the premises of home is the backyard. This is not inviting from the point of literary taste, or from any other taste as for that matter, but its importance forces recognition. It has an important relationship in this complex structure. Wherein is this relationship important?

First, I might mention its proximity to the kitchen as a reason of its importance. No one disputes the value of clean, wholesome food as essential to the health of the family.

Second, I might mention the fact that the well or spring, or at least the water supply, is usually situated in, or in close proximity to, the backyard, and no one disputes the value of pure water as being necessary to the health of the family.

Third, I might mention the fact that the backyard, oftentimes, I might say, usually, is the dumping ground for every type of filth the home affords. When we contemplate the proximity of all these elements, and the thousand methods of communication between them, the importance of their relationship becomes quite obvious.

Diligence pertaining to the cleanliness of the food and drink of the family must be exercised long before they have gained entrance into the kitchen or dining-room. A dining-room spotlessly clean is not evidence conclusive that the food served is clean.

From all the scientific discoveries of recent years we are able to make many valuable deductions. One of a great deal of importance is to the effect that many of the diseases from which we suffer are "swallowed." I mean by this that things are taken into the stomach which produce most of our diseases and many of our deaths. This is particularly true with reference of children's diseases. How can this be true? First, one may take into the stomach foods, by nature, improper for the individual, e. g., solid diet to a ten months old child, or even the milk given may not be properly proportioned to make a suitable diet. Second, one may take foods adulterated or improperly prepared. Third, foods may be taken which, owing to insanitary handling, are laden with the specific poisons which produce disease.

The first two methods mentioned should not come in a short

paper on sanitation, as they belong to the domain of "Pure Food Inspection" and dietetics. The third method I shall discuss. The poisons of many diseases are transmitted in foods and water, particularly of typhoid fever, hookworm disease, cholera and other gastrointestinal affections. How do foods and water become the means of transmitting these poisons? This is easily answered. The spring or well, or least, the water supply of the home, is situated in or in close proximity to the back yard. All types of filth are here disposed of. Heavy rainfalls upon this porous soil naturally drain the filth into the water supply. Thus it becomes polluted.

Foods—Foods which are served raw are those most important in transmitting disease, because heat serves to sterilize those which are cooked. There are many means of their contamination. The water, having been infected, may serve to carry the poisons to foods. Flies may carry these poisons from the back yard to the kitchen—provided the kitchen is not screened with screens which actually do screen. I say this because they frequently do not. Too much importance cannot be placed upon this pest. Its importance depends upon what it has access to—both inside and outside the house. If there be a source of infection on the premises nearby, the fly is most certain to carry this infection to foods.

Soiled hands as a means of food contamination *should probably not be mentioned by me here*, but I mention this particularly to bring before your minds a danger which is very important. It is important because I have, in many instances, seen the mother serve the purpose of both a cook and a sick nurse in the household. There is no doubt but that many homes have been wrecked by typhoid fever which was transmitted from the sick room to foods by the hands of a devoted mother. Then I would say that too much precaution cannot be taken by an individual who visits or nurses the sick, particularly when that individual handles foods to be served cold.

From this very limited discussion of these apparently small but really momentous questions, the importance of home sanitation becomes very apparent, and I repeat, home sanitation must include the premises. *No house can be more sanitary than its immediate surroundings*, because there is entirely too much communication between the indoors and outdoors of a home.

Typhoid fever constitutes one of the great health questions confronting the people of the South, and it is a fact that typhoid fever is rapidly becoming to be a rural problem, because the cities are in advance of the country in its solution. The cities have partly solved the problem by taking every precaution to make sure that the city has clean water and milk supply. We can, by legislation, regulate these supplies to a certain extent. It then becomes a simple matter when the purification of one water supply protects all the inhabitants of a city; but not so in the country. Each country home constitutes a unit, with a water supply or a dairy supply, and almost a grocery on the premises, and its own method of disposing of waste. Sanitation then becomes an *individual home matter*. The typhoid fever problem will

not be solved, in so far as the rural home is concerned, by legislative enactments prohibiting the emptying of sewerage into streams and lakes, or by the regulation of dairies. It will be eventually solved by the individual rural home, but preparatory to this accomplishment is the education in the science and art of home-making.

I was reading a few evenings ago about the great work of Mrs. Frank Ambler Pattison. She seems to have given the problem of home-making considerable thought; but more than that, she has given it effort. She does her house work, much of the drudgery of which has been eliminated by her own patented labor-saving devices. She gave it a deserved dignity by saying that "Housekeeping must be raised to its rightful place as an art and a science."

Rural home-making becomes a far more complex problem than city home-making. To properly arrange and keep a house and premises in the country requires knowledge, skill and system superior to that required to keep a city home.

I might briefly consider home construction, but I shall be forced to be brief, and will only mention ventilation. According to vital statistics we have, it is a fact deplorable, too, that we have almost as many deaths from tuberculosis among country dwellers as among city dwellers. This occurs in spite of the fact that the very elements of cure exist in the country—fresh air and fresh foods. There are reasons for this state of affairs, and it must be due to the fact that rural dwellers fail to avail themselves of these very elements. I have seen many rural homes situated so as to receive the pure, invigorating breezes fresh from the forests and fields, but this fresh air was barred from entering the bedroom by a tightly closed window, thus impoverishing human bodies robbed themselves of an element very essential to their well being.

The causes of tuberculosis may be classified as specific and general—the specific cause being the germ which produces the disease; the general causes being any influences which lower the vitality of individuals. This vitality, or vital resistance, may be lowered as a result of heredity, or incidental to improper hygienic surroundings. If these two latter causes were not at work *tuberculosis would not exist, because the specific cause cannot act save upon individuals whose vitality has been lowered.*

Home sanitation looks to making the inhabitants of home more vigorous, and in this lies the hope of tuberculosis eradication. We, who are studying the disease from the standpoint of prevention, are concluding that the disease will never be conquered by the establishment of almshouses in which the advanced cases can be isolated, however important this effort is, because the general causes which produce the disease are still active. It is pure, wholesome, well-prepared foods, and well ventilated sleeping rooms, to which sunlight has access, or I might say in brief, it is to hygiene and sanitation in the home that we look for an eventual mastery of the disease.

We are indebted to Mr. Ed. Howe for the following pointed paragraphs, not all of them pertinent to the subject, but well worth remembering:

An open window is better than an open grave.

Measles in a school are like fire in the tall grass.

The best spring blood medicine—work.

Polluted well water cannot be purified by painting the pump.

God bless the man who first invented fly screens.

If your milkman brings you warm milk make it hot for him.

A fly in the milk may mean a member of the family in the grave.

Good water is more to be prized than rubies, and clean hands than much fine gold.

Many a cough ends in a coffin.

A careless spitter with a little cough is more deadly than a big man with a big revolver.

The only good fly is a dead fly. The best fly is the fly that never was born.

A dirty well is more dangerous than a dirty kitchen.

Then we might say that any movement which has as its aim the prolongation of human life, and the mitigation of human suffering, must have the support and cooperation of home-makers and the home-makers' societies, if it ever succeeds. Home-making is an art and a science, and must be accorded this dignity.

When John Howard Payne penned the words of the simple little song, "Home, Sweet Home," he bespoke the sentiments of us all. By reason of this fact this simple verse is immortalized. But, however sacred are those sentiments of home, we must not in them lose sight of the practical, and neglect the home's efficiency, because home efficiency is the true basis of our natural efficiency.

OFFICERS ELECTED.

By action of the Association, the offices of Secretary and Treasurer were combined.

The following officers were unanimously elected:

Mrs. J. Taylor Stratton, Madison, President.

Mrs. Clara Boone Mason, Prospect, Vice-President.

Mrs. Myra Tandy, Leoma, Secretary-Treasurer.

Mrs. T. G. Settle, Nashville, member of the State Fair Board.

Mrs. W. M. Landis, of Fayetteville, was elected a member of the Executive Board. Other members of this board are Mrs. John Walker, of Wartrace, and Mrs. T. G. Settle, of Nashville.

RESOLUTIONS ADOPTED.

The following resolutions were adopted:

WHEREAS, The national and state governments have done and are doing so much for the men, boys and girls of the state in farm demonstration work, corn clubs and tomato clubs; therefore, be it resolved,

1. That we, the members of the Home-makers' Section of the Middle Tennessee Farmers' Institute, ask our state legislature for a generous appropriation to aid our organization in taking to the women on the farms opportunities to keep step with their farmer husbands.

2. That our warmest thanks be extended to the management of the Hermitage Hotel for the uniformly courteous treatment which we have received at their hands and for the use of the assembly room of the hotel for our meeting.

3. That our sincere thanks be extended the Tennessean and American for an interesting and instructive trip through the paper's plant.

4. That our thanks be extended Phillips & Buttorff for the loan of a collection of household articles demonstrating the latest devices for making home work lighter.

5. That our thanks be extended the Joy Floral Company for flowers sent to our meetings.

6. That the thanks of the entire association be extended Mrs. Stratton, Mrs. Settle and Mrs. Tandy for the heartfelt interest which they have taken in making the meetings of the association interesting and helpful.

7. That our sincere thanks be extended Commissioner Peck and the office force of the Agricultural Department for their assistance in making the preparations for the meeting of the association.

8. Be it further resolved, that a copy of these resolutions be included in the minutes of this association.

By unanimous vote of the association, Mrs. T. G. Settle was appointed to appear before the legislative committee to ask an appropriation for the association.

Mrs. Pearl Williams Kelley, of the Free Library Commission, gave the following interesting address:

LIBRARY PRIVILEGES FOR FARMERS.

I am always delighted to talk to the home-makers of Tennessee, for I feel that I have the best message for them that the state has ever yet offered her rural citizens.

I am so pleased to have this opportunity of telling you of the newest and one of the most interesting departments of state—the Tennessee Free Library Commission.

One of the chief objects of this commission is to maintain a library to be used by all the people of Tennessee who desire books for study or recreation, and to offer a library service which makes it possible for the most isolated inhabitants to have good books to use as freely as they would have them in any city. Tennessee realized that the library facilities of our state were incomplete until equal rights and privileges, from a library standpoint, were offered to all its citizens, and for this reason created the Free Library Commission, to solve the

problem of furnishing free books to the entire population. This it is accomplishing through a system of carefully planned traveling libraries. The traveling library is an agency that has been very properly classed with good roads, trolley lines, telephones and rural free delivery in bringing the outside world to people living in rural communities.

Traveling libraries are a collection of fifty books of general reading which are loaned to any rural community in the state. They consist of books of interest in popular science, sprightly and well illustrated books of history and travel, readable biographies, home economics, agriculture, clean, wholesome, cheerful fiction, and a liberal supply of attractive books for children.

HOW OBTAINED.

Any community or study club may form a traveling library association by obtaining the signature of three responsible citizens to the agreement blanks furnished by the commission, appointing a librarian, and providing a suitable place of keeping for the library.

The books are the property of the state and must be loaned free of charge to any responsible person wishing to use them.

PLACE OF KEEPING.

A suitable place must be provided for the library, one that is easily accessible to the entire neighborhood.

The library may be kept for the period of six months, and returned to the commission office for exchange.

INDIVIDUAL LOANS.

One or two books are loaned from this collection to any individual through request made by the librarian of the local traveling library. When there is no traveling library station, the books are loaned to individuals upon application signed by a school officer of the district. Not more than two or three books may be borrowed at one time. They may be kept for two months, and the borrower pays the postage or express charges both from and to Nashville.

Many good books on agriculture have been placed in the commission's traveling libraries. Agriculture is Tennessee's largest single industry. One-third of our toilers are farmers; one-half of our people live under rural conditions. The farm home is the root of great things for Tennessee, and it is not only the province of the state but its very urgent duty to do all within its power for the betterment and enrichment of country life, and for this reason the Library Commission has made a specialty of books for the farmer on practical subjects, such as soils, fertilizers, drainage, grains, grasses, vegetable gardening, fruits, forestry, animal husbandry, dairy, poultry, insects, and a large number of books dealing with other subjects connected with country life, as good roads, water supply, the country school, country church, and other topics of equal interest to the farmer.

The farmers of our state are quickly learning that the reading of

the Library Commission's splendid collection of books on agriculture means more productive farms, and are showing their initiative and public spirit by organizing Farmers' Agricultural Clubs and taking advantage of the state's generosity and securing one of the traveling libraries for their club that can furnish them the information wanted and which they might have to go without, if it were not for this state plan of meeting their needs.

Tennessee's Free Library Commission realized that the state that cared most for the home will be the greatest state, and provided a most helpful collection of books on home economics for the rural home-makers of our state.

The farmer wants a book that will lay bare the mysteries of filling a silo; he may desire one on the scientific feeding of farm stock, but his wife wants something on the scientific feeding of the human animal. If it is of value for the farmer to understand a balanced ration for his cow, why is it not of equal importance for his wife to understand a balanced ration for her family? Are not the children of more value than the cows? The farmer's business is raising hogs and horses; his wife's business is raising boys and girls. The future of agriculture in our country depends upon the physical, mental and moral condition of our boys and girls. This condition depends largely upon the wisdom and intelligence of the mother. The farmer wishes to know the best way to construct a poultry house, his wife wants to know how to make a home whose influence will be helpful and lasting.

The Library Commission is sending to the housewife in every section of Tennessee books on food and dietetics, cookery, servants, etiquette, clothing, laundry, bacteria, hygiene; children, domestic architecture, furniture, rugs, and the country life question in general.

We are sending to the children of the state a most appropriate collection of juvenile literature, believing that the books a boy reads for pleasure do more to determine his ideals and shape his character than the text-books he studies in school. A leading educator has said: "It is not of so much consequence what a boy knows when he leaves school as what he loves. The greater part of what he knows he will speedily forget. What he loves he will feed on. His hunger will prompt his efforts to increase his store."

It is now agreed that the love of books, as mere things of sentiment, and the reading habit, are better results of schooling than any of the definite knowledge which the best of educators can store into the pupils' minds. Teaching how to read is of less importance in the intelligence of a generation than teaching what to read. To teach a child how to read and not what to read is putting a dangerous weapon in his hands.

Through our free traveling libraries we are making it possible for the child of the hired laborer to read the same books as the child of the president. Our books are just as inspiring and refreshing to the

blacksmith as to the lawyer, to the farmer as to the banker. Through them we are giving "the best reading for the largest number at the least cost."

Is it possible to devise any addition to our system of popular education which will give so much information, so carefully chosen, at so small a cost?

In no other activity in which the state is engaged are the people being reached and helped as through our free traveling libraries.

The Home-Makers' Association presented four speakers to the men's section of the Institute—Mrs. J. Taylor Stratton, Mrs. Myra Tandy, Mrs. Rose Nipher and Mrs. Rutledge Smith.

Mrs. J. O. Rust gave a talk on "Benefits the Country Women May Derive From the State Fair."

The Home-Makers' Association then adjourned, to meet at the call of the Commissioner of Agriculture.

POULTRY.

Eggs should be placed immediately after gathering in a cool place, where dust cannot collect or settle on them. A case of thirty dozens, when up to standard weight, should weigh forty-five pounds net. Grade according to size, color and quality. Pack in neat package, because the package in a good many instances has to sell the contents. Appearance sells, and sells at a good price.

Very hungry hens won't lay, so be sure to provide enough. Hungry stock of any sort is a poor investment; then they are more quarrelsome and troublesome about bothering everything. Keep only the number you know you can feed well and care for well; more than this number will but increase the expense account, without a corresponding increase in the profits.

Don't be afraid of giving oats to hens. At first, it is best to give a full meal, but by working up to it gradually, and providing plenty of grit, there will be no danger. Some poultrymen assert that no other grain is quite as good for egg formation, and when fed in connection with wheat, also whole corn during cold weather, the three make a ration hard to beat.

We have ample proof that intelligent management will make Southern soils yield two and three times what the average soil now yields, but the numbers of our progressive farmers are too small.
—*The Progressive Farmer.*

TWENTY TESTS OF PROGRESS FOR YOUR COUNTY.

1. Is every country boy and girl in your county getting a six-months school term?

2. Have you a county superintendent of education giving his whole time to the work?

3. Have you voted road bonds or a road tax?

4. Have you a county superintendent of health employed for all his time?

5. Does the Farmers' Union or any other farmers' organization thoroughly cover your county?

6. Have you a good county fair?

7. Do you select for your county officials men who will help the county forward fastest instead of the men who serve the party machine best?

8. Are your churches gaining in strength and influence and the people in temperance and morality?

9. Have you properly supported farmers' institutes, and are there institutes for farm women as well as men?

10. Have you corn clubs for the boys and tomato clubs for the girls?

11. If you are in the tick-infested territory, are you doing anything to eradicate the ticks and get out of the cattle quarantine?

12. Have you shown sufficient interest in the Farmers' Cooperative Demonstration Work to get its advantages for your farmers?

13. Have you rural free delivery every where you might have it?

14. Has every school in your county a good library?

15. Can your boys and girls get the advantages of a good high school near them, without leaving their home communities?

16. Are you cooperating with the State in the fight to exterminate the hookworm disease?

17. Is there a good rural telephone system covering the country?

18. Are you supporting a wide-awake county paper—one that is more interested in the progress of the county than in partisan politics—and are your farmers taking the best farm papers?

19. Have you abandoned the old fee system of paying county officers?

20. Are your citizens and your board of commissioners willing to

go down in their jeans and produce the necessary money, economically administered to secure these profitable forms of progress?

These are 20 tests of progress. Let 5 represent "good" in each case, then take the score and see how much your county lacks of grading up to the desired "100" mark. Perhaps your county paper may be willing to discuss the program and let the reader join in plans for remedying deficiencies.—*The Progressive Farmer*.

WHY THE SOUTH IS A GOOD LIVE STOCK COUNTRY.

The test which should be applied to any country in judging of its suitability for live stock production is its facilities for producing forage. Of course, it must be shown that there are no climatic or other conditions detrimental to the health and growth of live stock, which reasonable efforts on the part of the live stock producer will not overcome. Only one such condition has ever existed in the South—the presence of the cattle ticks—but since one-fifth of the tick-infected area has been cleaned in six years and it is now a well-established fact that the tick can be easily eradicated and kept off of any farm at a trifling cost, the last serious obstacle to live stock raising is being removed.

But to return to our original proposition, that any country that can produce abundance of nutritious forage is adapted to the growing of live stock.

An acre of land that may be bought for from \$25 to \$50 in the South, will produce forage in one year about as follows:

1. Forty bushels of oats and twenty bushels of soy beans or from one and one-half tons to two tons of soy bean hay. The twenty bushels of soy beans is equal to about 1,200 pounds of cottonseed meal or thirty-seven and a half bushels of corn for feeding purposes and the ton to a ton and a half of soy bean straw produced is equal to an equal weight of timothy hay.

2. A crop of oats may be grown in the spring and from one to two tons of lespedeza, or cowpeas, or soy bean hay grown the same year. For feeding dairy cattle, five pounds of any one of these legume hays is equal to four pounds of wheat bran.

3. A crop of oats and vetch hay, or oat and crimson clover hay, yielding from one and a half to two tons per acre may be cut in the spring and a crop of silage corn grown the same season.

4. Two, and some times three forage crops can be grown on the land each year that will improve the land if cheap mineral fertilizers are added.

These facts account for the record of the South for a large production of hay per acre than the so-called hay-growing and live stock states. The following is the average yield of hay per acre in the states named for the ten years—1901 to 1910 inclusive:

New York	1.26 tons
North Carolina	1.54 tons
Pennsylvania	1.34 tons
Georgia	1.52 tons
Iowa	1.51 tons
Louisiana	1.86 tons
Illinois	1.35 tons
Alabama	1.65 tons

It is also a well known fact that when the Southern farmer sets about to make a large yield of corn, he makes so much larger yield than the Northern grower ever makes, when trying for a maximum yield, that the latter will not believe that the large Southern yields are made. With these facts, what further proof is required to show that the South has unsurpassed facilities for making forage for live stock?—*Progressive Farmer*.

POULTRY AND DIVERSIFIED FARMING.

The farmer and the small poultry farmer produce the bulk of the world's poultry products. Russia is the largest exporting country of eggs and poultry, and this production is almost entirely in the hands of the peasants. Large poultry farms have invariably been failures in the thickly settled countries of Europe, and if this is any criterion in the future, intense culture and large plants in America will be a rare thing. Farmers will always be able to produce more cheaply than owners of special poultry plants. It is the accumulated production of the small poultry keeper that supplies most of the poultry and eggs to the 100,000,000 people in the United States.

Poultry is seen everywhere on the small farms of Denmark. The majority of these are 50-acre farms, and the size of the flock is small, the number of laying hens usually ranging from thirty to fifty. Denmark has about the same population as Chicago, but she exports as much poultry produce in one year as the United States does in five. The great development of the Danish egg trade can be directly attributed to the efforts of the Danish Farmers' Cooperative Egg Export Association. The system of marketing is thoroughly organized. Denmark has no large centers of population, and organization was found necessary to trade with the best of the foreign markets, which is Great Britain.—*Farm, Stock and Home*.

REARING YOUNG CALVES.

It is really a wise man's part to rear calves successfully. It is said that in Europe it has been found that women are much the more successful in this work, owing to the fact that they are much more watchful and sympathetic in their treatment of the young than men. We have no doubt this is true.

The change from fresh mother's milk to skim milk, half the time cold, as well as fed from an unclean pail, naturally should be attended with considerable danger to the calf. And because of all this indifference and disregard to certain well known rules, the mortality among young calves from the ills of indigestion is very great. It will richly pay any breeder, or farmer who takes pride in raising calves to make a special study of this question.

Some calves seem to be born with so strong a predisposition to live that they can make up for all the carelessness and neglect of those that care for them. But even at that they do not make as well developed a growth as they would have done had they been handled right in their early days.

Hundreds of times has Hoard's Dairyman said this: "The young calf is a baby." That means that the same precautions should be taken to keep this bovine baby dry and clean that a good mother uses with her human baby, that is, in a corresponding sense. It is just as deadly to a bovine baby to lie in its own urine and filth as it would be to a human baby: It seems very difficult to get this idea into the heads of many farmers. Their wives would know better from the start, if they had the management of things. That is the reason why the Dutch, Guernsey, Jersey and Scotch farm women are so much more successful in rearing young calves than men, and so they have pretty much all of that work to do.

It is well to get these ideas firmly set in mind. A dry, clean, well drained bed for the young calf is half the battle. Use plenty of disinfectants. For bedding the baled shavings is the best we have tried.

One word further; keep the feeding pail clean and well scalded out and feed the milk at blood heat. These few things well looked after, with the added precaution to feed sparingly, will save the lives of thousands of calves that will otherwise die.—*Hoard's Dairyman*.

We need more real farmers. Let us make it known to the world that we will sell lands to and welcome intelligent white farmers who will come to the South, become resident farmers and do good farming.—*The Progressive Farmer*.

MAURY COUNTY CORN SHOW.

With a yield of 159.37 bushels of corn on an acre, Herbert McKibbon of Culleoka, a brother of the prize winner of last year, won the Columbia Board of Trade's \$100 in gold prize for the largest yield of corn made on an acre of land by a boy under 18 years of age. The prizes were awarded Nov. 18 at the courthouse in the presence of a large number of farmers and members of the board of trade, the prizes being presented to the winners by Col. J. C. Hardy, president of the board of trade. Young McKibbon is a son of I. H. McKibbon, on Fountain Creek, near Culleoka, and his corn was made on the same acre of land upon which his brother, John Van McKibbon, last year produced 167 bushels and won the state prize, which included a trip to Washington, where he received a certificate of merit from the Secretary of Agriculture.

The winner this year is only thirteen years of age. His land was creek bottom, tiled, drained, and he used fifteen tons of manure and 800 pounds of commercial fertilizer. His land was broken eighteen inches deep, and was twice broken. He plowed the corn six times and hoed it three times. He used Weakley's Improved Prolific, the seed being secured in South Carolina. In addition to winning the \$100 prize of the board of trade, McKibbon won the \$25 gold prize of the Fifth, or Culleoka district, a \$20 saddle given by a Columbia merchant, and a plow given by another merchant. He is also a contestant for the state prize, and so far as known his yield has not been equalled this year.

Aubrey Hargrove, living near Glendale, was the winner of the second prize of the board of trade, \$50, his yield on an acre being 107 bushels. The third prize of \$25 was given to William Mayberry of Columbia, with a yield of 102 bushels. The prize for the best exhibit of ten ears of corn was also awarded to Herbert McKibbon, the winner of the other prizes. The corn exhibit shown at the courthouse was a big feature of the day, and attracted much favorable comment.

COSTLY FEEDING OF INSECTS.

The expense of feeding the insects in our country is several million dollars more than the expense of educating our children. Why not include bird study and their protection in the children's education, and thereby help to reduce the high cost of bug life?—*Nature and Culture.*

INDEX.

	Page.
Report of the Commissioner of Agriculture	5
Financial Statement	20
Recommendations	21
Report of the State Live Stock Inspector	28
Financial Statement	31
Special Orders	57
Sale of Commercial Fertilizers—Report of Jesse Tomlinson.....	77
Feed and Seed Inspection—Report of A. L. Garrison.....	80
Financial Statement	88
Apiary Inspection—Report of Dr. J. S. Ward	92
Expense Account	97
Tennessee State Fair—Report of T. F. Peck, Chairman of Board of Trustees	101
Talks to Farmers:	
Lime on the Soil	105
Soil Moisture	113
Waste of Time on the Farm	116
Health on the Farm	117
Composition of Soils	122
Value of Barnyard Manure	124
Dairying in Tennessee	126
Wheat Culture	128
Young Men on the Farm	131
Book Farming	132
Conserving Moisture	135
Community Breeding	137
Tennessee Fertilizer Law	139
Tennessee Feed Control Law	148
Tennessee Seed Law	155

APPENDICES.

Bureau of Immigration—Report of Commissioner T. F. Peck.

State Board of Entomology—Seventh and Eighth Annual Reports
of G. M. Bentley, State Entomologist.

Middle Tennessee Farmers' Institute—Proceedings of Tenth
Annual Session, December 5-7, 1911.

Tennessee Agriculture—Vol. 1:	Page.
Announcement	3
Advantages of Tennessee	4
Prevention of Typhoid Fever	7
Tennessee State Fair	9
Economic Importance of Eradicating the Cattle Tick	13
Rules and Regulations Governing Live Stock Sanitary Control Work in Tennessee	14
Program East Tennessee Farmers' Institute	21
Road Building in Tennessee	27
Concentrated Commercial Feeding Stuffs	35
May, 1912, Crop Report	76
East Tennessee Farmers' Institute	83
Address by Commissioner Peck	85
Address by W. T. Roberts	91
Address by Superintendent J. W. Brister	95
Address by G. A. Hubbell	106
Address by J. N. Meroney	109
Address by J. W. Hart	113
Address by J. H. McClain	118
Address by Dr. George R. White	122
Address by H. D. Tate	126
Address by F. H. McClung	129
The Agricultural Special	131
The House Fly as a Cause of Disease	133
Live Stock in the South	135
Bureau of Immigration Advertising	136
June, 1912, Crop Report	140
Managing and Equipping a Two Hundred-Acre Stock Farm..	147
How to Improve and Select the Best Ten Ears of Corn.....	161
Grade Draft Mares	166
The State Fair	168
Boys' and Girls, Clubs	173
Girls, Industrial Club Work	183
The Farm Woman at the Institute	186
First Aid to the Housewife	191
The Moral Training of Children	195
July, 1912, Crop Report	204

APPENDICES—CONTINUED

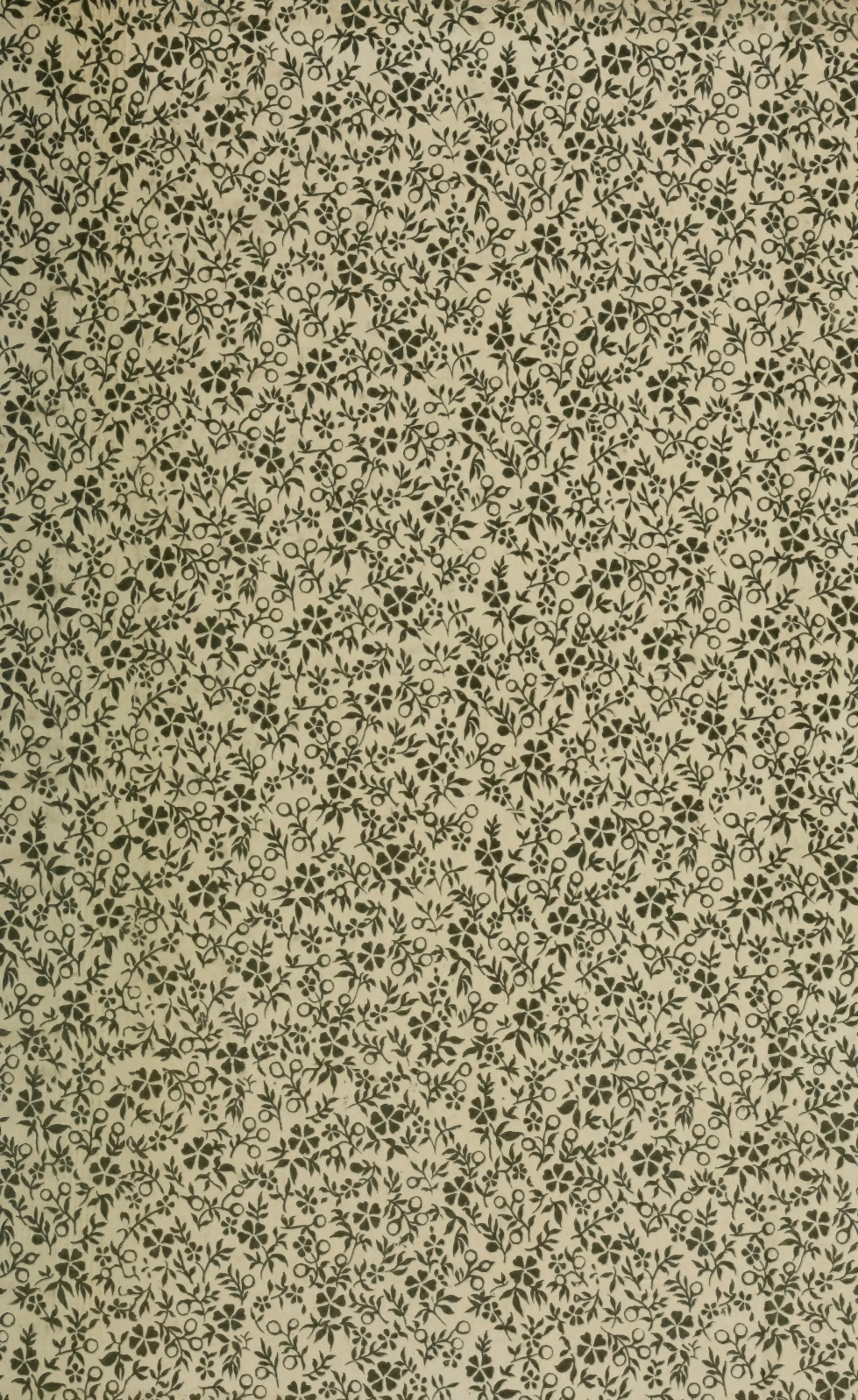
Page

Tour of Agricultural Special	211
In the Dark Tobacco District	214
The Japanese Persimmon	216
Home Conveniences	218
The Woman of the Farm Home	221
Improved Seed	230
Production of Eggs	231
Illiteracy in Tennessee	233
Great Strawberry Crop	235
August, 1912, Crop Report	235
State Fair Awards	243
Farm Boys' Encampment	269
Improved Seed Corn	272
Results of Potato Spraying	276
Tennessee Breeders' List	277
September, 1912, Crop Report	286
Agricultural Possibilities of Middle Tennessee	291
Knapp Agricultural Day	303
Farming in Lawrence County	304
Growing Potatoes	305
Benton County Corn and Tomato Show	307
October Weather Summary	308
West Tennessee Farmers' Institute	309
Tennessee Live Stock	310
Corn Growing Contest	313
Phosphate in Hickman County	313
"Pink Eye" in Cattle	314
October, 1912, Crop Report	317
Program of Middle Tennessee Farmers' Institute	323
State and County Fairs	326
Tick Eradication Work in Tennessee	332
Source and Use of Fertilizers	335
Silos and Silage	339
Farm Products of Tennessee	342
Game Laws of Tennessee	344
Agricultural Course at Lebanon	345
Demonstration and Corn Club Work	346
Agricultural Class at Paris	347
Benton County Corn and Tomato Clubs	348
Short Course in Agriculture	351
Turkey Buzzard as a Carrier of Animal Diseases	352
Meeting of State Fair Board	354
Campaign Against Cattle Tick	355
Tennessee Exhibit in Michigan	355
Available Supply of Corn	356
Percheron Breeding in the United States	357
Bankers Interested in Agriculture	360
Dead Wealth of the Farmer	361

APPENDICES—CONTINUED

	Page
Handling Vicious Bulls	363
November, 1912, Crop Report	364
Middle Tennessee Farmers' Institute	371
Address of Charles C. Gilbert	372
Address of J. N. Meroney	373
Address of President S. N. Warren	375
Address of Commissioner T. F. Peck	378
Selecting Corn for Seed	386
Boys' Corn Clubs in Tennessee	388
Corn Club Work in Middle Tennessee	392
Knapp Farm and School	394
Potato Club Movement in Tennessee	399
Tobacco Industry in Tennessee	402
Good Roads and Corn Clubs	404
Some Needs of Country Schools	407
Need of County Institutes	412
Practical Ideals	414
A Plea for Railroads	420
Preventable Losses on the Farm	423
Health and Sanitation on the Farm	433
Cost of Producing Crops	438
Hog Cholera, Bovine Tuberculosis and Texas Fever—a \$5,000,000 Proposition	446
Award of Corn Club Prizes	461
The Importance of Saving Our Soils	463
What I Saw at the State Fair	466
The Farmers' Best Crop	468
Resolutions Adopted	472
Election of Officers	476
Potato Club Prizes	478
Tennessee's Agricultural Progress	483
State Corn Club Organized	484
Home-Makers' Association:	
Address of President	487
Cooperation Between City and Country Women	489
Benefits of a College Education for Farmers' Daughters.....	493
Care of Children in the Home	496
Tomato Raising and Canning	499
School Lunches	500
Sanitation and Hygiene in the Home	501
Election of Officers	505
Resolutions Adopted	505
Library Privileges for Farmers	506





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